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Vol. XIV, No. 8 AUGUST, 1925

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

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THE SEVENTY-THIRD ANNUAL CONVENTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN DES MOINES, IA., DURING THE WEEK OF AUGUST 24, 1925.

Headquarters—Fort Des Moines Hotel.

The 1925 Meetings of the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy will also be held in Des Moines, same time and place.

For Association Roster, see pages x, xii and xiv.

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EUGENE AYER CARRELL

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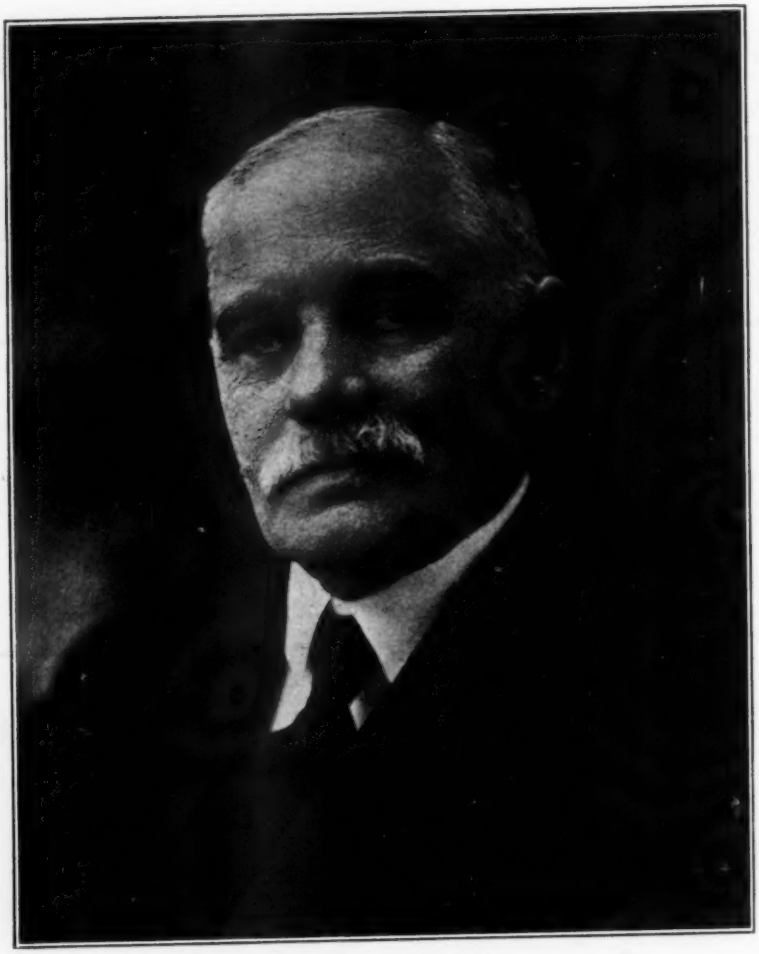
Member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1875



EUGENE A. CARRELL

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XIV AUGUST, 1925 No. 8

EUGENE AYER CARRELL.

The ancestors of Eugene Ayer Carrell were Friends and Presbyterians, and settled, during the Colonial period, in the section where the subject of this brief sketch was born, December 6, 1852, in Randolph Township, Morris County, N. J. The youth attended public school until 1867, when he entered the employ of his uncle, Charles H. Dalrymple, at Morristown. The latter was a member of the AMERICAN PHARMACEUTICAL ASSOCIATION from 1860 until his demise, and being quite a regular attendant at the annual meetings formed friendships with the leaders in pharmacy of his day. He was one of the organizers of the New Jersey Pharmaceutical Association in 1870, and its first president.

It was under the schooling of this preceptor that Mr. Carrell received his training, and it was the former who in 1874, at the Long Branch meeting, presented his nephew and associate for membership in the New Jersey Pharmaceutical Association, and in the following year, at the New York Convention of the AMERICAN PHARMACEUTICAL ASSOCIATION, signed his application for membership in that body. Mr. Carrell has attended only a few meetings of the A. PH. A., but his interest in the transactions and publications of the Association continues.

The business relations formed with Mr. Dalrymple in 1867 continued until after the death of his uncle, in 1882, and as manager of the pharmacy for the estate until 1888, when he established a store on his own account in Morristown, well and favorably known as "Carrell's Pharmacy." This business was continued by him until January 1, 1923, when it was incorporated, and two young men, Messrs. Robert Joyce and George R. Gerdon, who had long and faithfully assisted Mr. Carrell, became interested with him in this corporation, under the name of Carrell's Pharmacy, Inc.

In 1880 Mr. Carrell married Miss Hannah Adele Day, of Mendham, N. J. Mrs. Carrell died in 1919, and one son and one daughter and six grandchildren survive.

Mr. Carrell is a member of the Washington Association of New Jersey, and has served Morristown for two terms as alderman from his ward. He is a vestryman of St. Peter's Episcopal Church in Morristown, has been treasurer of the parish for many years, and is at present the senior warden.

E. G. E.*

* The Editor is indebted to Mr. George R. Gerdon for the data of this sketch.

EDITORIAL

E. G. EBERLE, EDITOR 253 Bourse Bldg., PHILADELPHIA

THE DES MOINES MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

THROUGH the efforts of the Local Committee of Des Moines, with the support of Iowa pharmacists, wide publicity has been given to the meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, to convene in Des Moines during the week of August 24th. There will also be held conventions of the National Association of Boards of Pharmacy, the American Conference of Pharmaceutical Faculties, National Conference of Pharmaceutical Research, and Pharmacy Laboratory Conference; the Plant Science Laboratory Seminar will be held at the University of Minnesota during the week of August 17th; nearly all of those attending the Seminar will, after its close, go to the convention city. The Northwestern Pharmaceutical Bureau is heartily coöperating with the Local Committee for a record attendance of pharmacists in Des Moines.

Information at this writing is to the effect that 9000 announcements of the meeting have been mailed—a copy to every member of the AMERICAN PHARMACEUTICAL ASSOCIATION, one to every druggist of Iowa and 2500 to the drug stores of the northwest outside of Iowa. The folder is evidently issued by coöperation with the Rock Island Railroad and gives the names of its representatives in the larger cities, a map, and outlines the train service to Des Moines. The General Program of the Convention, as printed in the July JOURNAL, is included. The wide publicity given should assure a large attendance because of the importance of this meeting, at which the American Pharmacy Headquarters will be a leading topic for discussion. Pharmacists have never had a greater opportunity to inform the public of the mission of pharmacy, and of their deep interest in the service—the attendance should overtop every other preceding convention in that respect, because of the outstanding project and the interesting program which has been prepared. Another topic that will have consideration is Pharmacy Week—how to derive the best results therefrom; other countries have become enthused over its possibilities—it has become of international interest.

Serve pharmacy, benefit your profession, by attending the convention in Des Moines, if you can possibly do so, and induce others to join you. E. G. E.

BIOLOGICAL STANDARDS OF THE NEW U. S. PHARMACOPŒIA.

THE new Pharmacopœia will carry the following statement in the preface:

"Biological assays have now been made compulsory for a number of important drugs and preparations, and in order to facilitate the adoption of these standards and to provide a greater degree of uniformity in the application of these assays, the officials of the Bureau of Chemistry of the U. S. Department of Agriculture, at Washington, have indicated their willingness to supply substances conforming to the new pharmacopœial standards."

Chairman of the Committee of Revision, E. Fullerton Cook, advises that word has been received from the Bureau of Chemistry that they are now prepared to supply standard substances conforming to the biological assay requirements of the U. S. Pharmacopœia, Tenth. Manufacturers are invited to make application and to indicate the approximate amount of material they may desire to receive from the Bureau. All who desire such standard substances against which to check their biological assays should make application at this time, addressing their communication to the Bureau of Chemistry, Department of Agriculture, Washington, D. C.

It is understood that the use of these Bureau of Chemistry standards is optional but they will doubtless be made the basis of comparison by all manufacturers. This service is the result of coöperation between the Committee of Revision, who have established the standards, a number of manufacturers who have supplied the Bureau of Chemistry with material, and the Bureau of Chemistry, which has made composite samples and will offer them without cost to those who manufacture biologically assayed products.

INTERNATIONAL CONFERENCES THAT CONCERN PHARMACY.

ONE International Conference that concerns pharmacy has been held, and two others will convene. The International Pharmaceutical Federation met in Lausanne, Switzerland, July 21st–23rd. A program of this meeting was printed in the July number of the JOURNAL. Dr. Arno Viehoever attended the meeting as a delegate from the AMERICAN PHARMACEUTICAL ASSOCIATION.

A second Brussels Conference to attempt further international harmony in the standards for potent remedies will meet September 21, and Dr. A. G. DuMez has been appointed an official representative of the U. S. Public Health Service, and he also will represent officially the Committee of Revision of the U. S. P. The 1920 convention of the U. S. P. recognized the need for a new conference. In outline, the tentative program of this conference follows:

First Topic.—Revision of the decisions made by the first conference.

Second Topic.—Unification of the composition of other heroic medicaments. The following are named in the program:

Preparations of Strophanthus, Hydrastis Canadensis and Cinchona. Belladonna leaf, Digitalis leaf, Ipecac. Adrenaline. Aconite Root and Colchicum Seed.

Third Topic.—Unification of arsenic and bismuth preparations.

Fourth Topic.—Is it desirable to unify the chemical assay methods for certain medicaments? Summing up: The work of the conference in the unification of assay methods should be limited to a choice between the methods of the different pharmacopœias, or to determine the procedure for making the choice rather than a study of the methods themselves.

Fifth Topic.—Is it desirable to adopt biologic methods to assay and to unify them? This is a subject that will come before the conference of the Section on Biological Standardization of the Health Committee of the League of Nations at Geneva, starting August 31st. Dr. Reid Hunt, Chairman of U. S. P. Convention, and Dr. C. W. Edmunds, Chairman of the Sub-committee on Bio-assay, U. S. P., will be present.

The Section on Hygiene of the League of Nations has charged a special committee to study the physiologic methods for the standardization of certain remedies: digitalis, belladonna, insulin, ergot and pituitary extract.

Sixth Topic—Unification of maximum doses.

Seventh Topic—Consideration of the proposition to adopt special containers for dispensing medicaments which will indicate by their form or other peculiarity whether the contents are intended for internal or external use.

Eighth Topic—International regulation of the traffic in narcotics. This topic will probably be deleted since the League of Nations has called two conferences for the purpose of studying and solving this problem.

Ninth Topic—Examination of the project to create a permanent international secretariat of pharmacopœias. Two projects are under discussion which do not differ greatly except as to the laboratories in which the work is to be done. The plan of Van Itallie makes use of scientific laboratories already in existence, and the Federation Internationale Pharmaceutique has expressed itself in favor of this plan; that of Tschirch requires a special laboratory annexed to the secretariat. As a matter of information the project of the latter is given:

1. Collection of all the articles of interest on pharmacopœias appearing in the journals and the publication annually of a volume of abstracts in German, French and English.
2. Comparison and verification of all methods for the determination of the active principles of drugs, principally of the heroic drugs, but also of the chemical medicaments, and publication of the results in such a manner that the reports will be continuous.
3. Elaboration, with the foregoing work as a basis, of projects for the regulation of and special decisions on all the articles of the pharmacopœias which lend themselves to international regulation. Those projects should then be submitted to the different governments represented at international conferences, where they should be discussed and adopted or rejected.
4. The office should also interest itself in international nomenclature and other analogous questions.

Tenth Topic—Adoption of an international nomenclature for pharmacopœias. The conference is asked to decide if it is desirable to adopt Latin as the nomenclature for medicaments;

If it is desirable to begin the titles of salts with the name of the cation or of the anion;

If it is desirable to exclude from the official nomenclature commercial names registered as trademarks and whether or not these names should be included among the synonyms.

THE U. S. PHARMACOPŒIA X ON SALE.

The new U. S. Pharmacopœia is now on sale. Early purchase will enable pharmacists to become acquainted with the new standard before it becomes official, January 1, 1926, and copies will be available for schools of pharmacy prior to the opening sessions.

SCIENTIFIC SECTION

A COMPARISON OF THE ACTION OF PITUITARY SOLUTION AND OF ERGOT ON THE ISOLATED HUMAN UTERUS.*

BY CHARLES C. HASKELL.

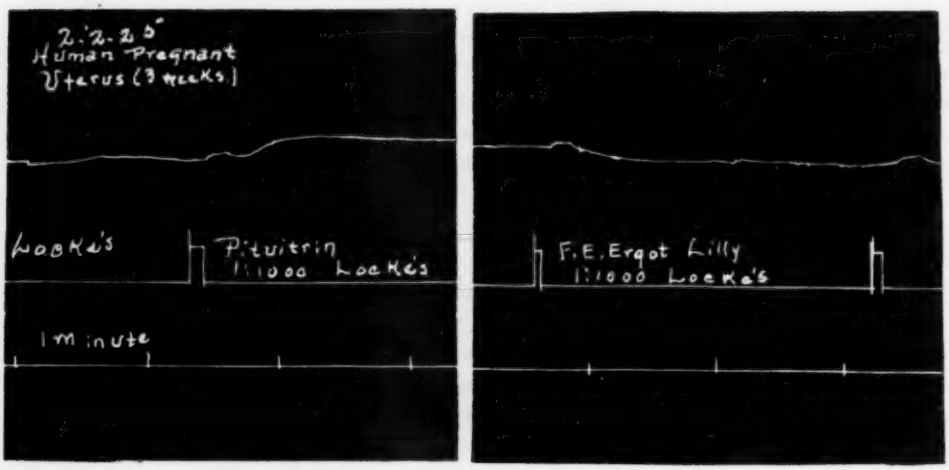
It is now universally conceded that the use of ergot in the early stages of labor is not permissible, because of the danger of uterine tetanus developing from the action of the drug. On the other hand, there are many obstetricians who contend that in pituitary solution we possess an agent that may be employed with impunity even in the first and second stages of labor, provided certain contra-indications are not present. The fact that pituitary solution has been used in thousands of obstetrical cases appears to support this view regarding its safety; but an examination of the literature shows that disaster occasionally accompanies the obstetrical use of this drug. Up to 1923, almost sixty cases of uterine rupture following the administration of pituitary solution had been reported; and this in spite of the singular hesitancy some obstetricians appear to feel in discussing the catastrophes which occur in their practice. Nor is uterine rupture the only evil consequence which has been ascribed to pituitary solution; of no less importance are the deleterious effects that may be exerted on the child; the increased intracranial pressure being responsible for cerebral hemorrhages, with the consequent death, paralyses, or mental impairment (1, 2).

It was not always felt that ergot was contra-indicated in the first and second stages of labor. In 1831, Ryan wrote of this drug: "In small quantities, it is a safe and valuable remedy, and has a specific effect on the uterus, exciting gradual but powerful contractions of that organ when the natural parturient action is diminished or has entirely ceased. It does not produce permanent contraction but merely renews the labor pains and augments their force . . . abridges human suffering . . . supersedes the use of instruments in many cases and it saves the attendant much anxiety and useless loss of time" (3). Because of disasters which have followed the use of ergot in the early stages of labor, this practice is now rightly condemned; in spite of a much larger number of disasters which have been reported as following such use of pituitary solution, there are many who would endorse Ryan's enthusiastic statements, were they made of pituitary solution.

In 1922, experiments were carried out in the Laboratory of Pharmacology of the Medical College of Va. and in the teaching hospitals of this institution with the object of determining the comparative activity of ergot and pituitary solution on the uterus (4). It was found that the uteri of cats and dogs responded much more readily to pituitary solution than to ergot and that tetanus was fully as apt to occur after pituitary solution as after ergot. Realizing the danger of administration of these drugs to pregnant women, only minimal doses were used, the contractions of the uterus being recorded by means of a mercury manometer connected with a Vorhees bag within that organ. With even the small doses administered, it was found that a persistent increase in tone occurred after pituitary solution, the

* The expenses of this investigation have been supported in part by a grant from the Research Fund of the AMERICAN PHARMACEUTICAL ASSOCIATION.

effect being equivalent to a true tetanus. It was felt that observations on the effect of the drugs on strips of excised human uteri would be of decided value; certain extraneous influences could be eliminated and the element of danger to the patient dispensed with. Gunn (5), Lieb (6), and Sun (7) have all observed the action of pituitary solution on strips of human uterus; Lieb has likewise experimented with ergot; none of these has carried out a definite comparison of the two drugs on the same specimen. Both Gunn and Sun observed tetanus following immersion of the strips in dilute pituitary solution, Sun especially having made a most exhaustive study of the activity of the strips under varying conditions. This author states: "When ergotol or quinine was added, no tetanic contractions were observed; but both of these drugs gave rise to rhythmic contractions which persisted for several hours . . . Upon the addition of pituitrin, however, an immediate response results, when contractions may be tetanic for a short time." These effects were produced on the lower uterine segment, which he normally finds

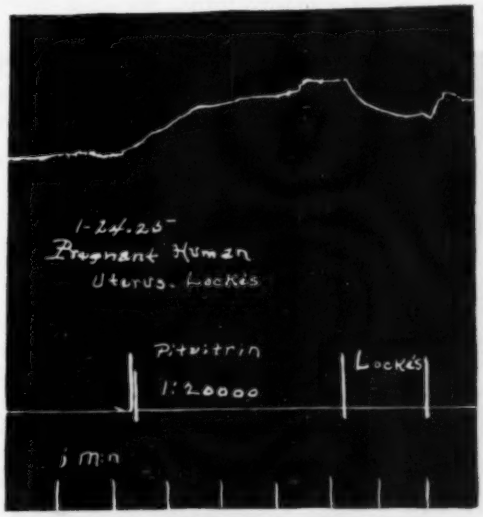


1. Human uterus: Third week of pregnancy: Fundic strip. At first signal, pituitary solution, 1 to 1000; tetanus persisted as long as allowed to remain in solution. At second signal, ergot, 1 to 1000, caused relaxation.

passive and quiescent. Lieb is inclined to the view that any reasonable concentration of pituitary solution does not cause tetanus; "in only one instance did pituitary cause even a transitory tetanus . . . The absence of tetanus has been repeatedly mentioned in the reports of the clinical use of pituitary." This statement is hard to reconcile with the only tracings which he publishes illustrating the action of pituitary; a concentration of pituitary, 1 to 50, causes a practically complete tetanus; while a concentration of 1 to 950 led to a marked and persistent increase of tone; fully equivalent to tetanus in its influence upon intrauterine pressure.

In the present study, experiments were carried out on both pregnant and non-pregnant uteri. The specimens were placed in Locke's solution shortly after removal from the patient; as soon as practicable, usually within an hour or two, small strips from the fundic portion of the uterus were immersed in warm (37° C.) oxygenated Locke's solution, and the contractions recorded in the usual manner. In

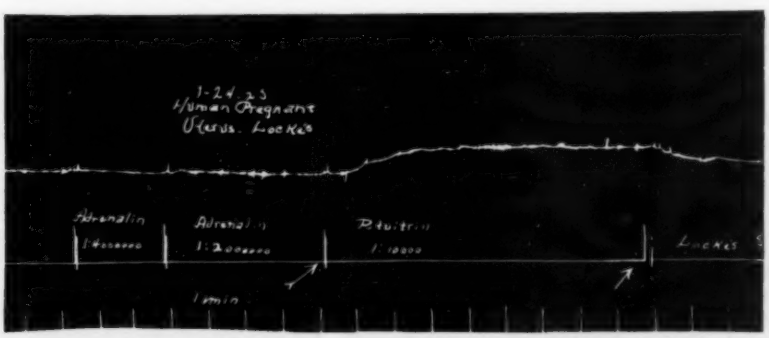
the earlier experiments, the mistake was made of adding the drug within a few minutes after setting up the apparatus; Sun has pointed out that at least two hours should elapse, this time being necessary for the establishment of stable condition of the strip. However, in the present experiments, this is unimportant, because the two drugs were compared under similar conditions.



2. Pituitrin, 1 to 20,000. Pregnant uterus.

Tracing No. 1 was the record of a strip from a uterus removed at about the third week of pregnancy because of pulmonary tuberculosis. The strip was immersed in the warm Locke's solution about ninety minutes after the uterus was removed; small, spontaneous contractions were immediately visible. The addition of pituitary solution to make a concentration of 1 to 1000 caused a persistent increase in tone, amounting to a true tetanus. In this experiment, fluidextract of ergot was added to make a concentration of 1 to 1000; a definite relaxation of the strip occurred. Lieb states that the alcohol in fluidextract of ergot is responsible for such an effect; this is possible, but the alcoholic concentration is certainly very low.

The second tracing was obtained from a strip removed at Caesarian section from a pregnant uterus at term. Pituitary solution, 1 to 2000, caused a much more pronounced response than was the case in the first tracing, the tetanus persisting as long as the strip was in the pituitary solution. The third tracing was obtained from a strip from the same specimen; after previous exposure to epine-



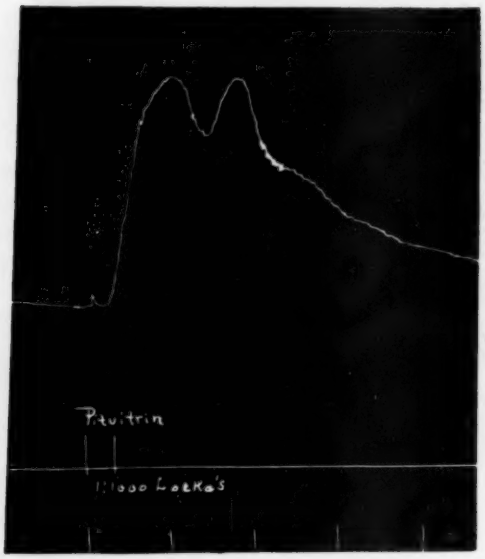
3. Pituitary solution, 1 to 10,000. Pregnant uterus.

phrin, exposure of the strip to pituitary solution, 1 to 10,000, caused a marked response.

The fourth tracing was obtained from another specimen removed at Caesarian section from a full-term pregnancy. This strip was much more irritable than the

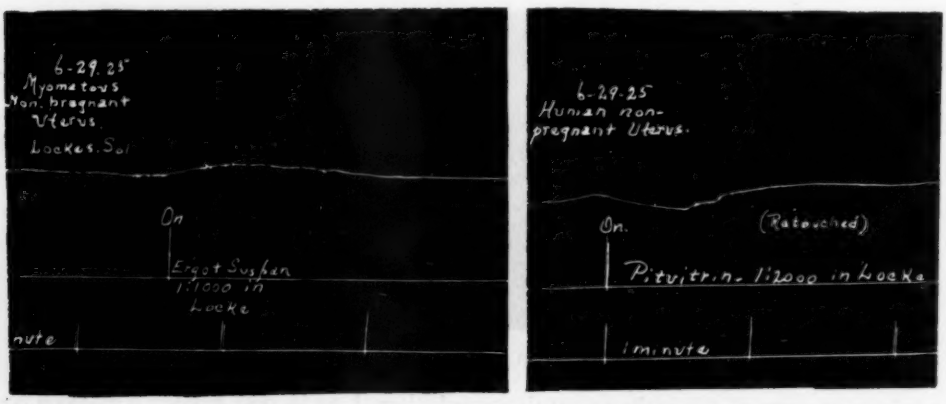
preceding; immersion in a solution of pituitary, 1 to 1000, for fifteen seconds caused the development of tetanus which persisted for almost ten minutes.

The fifth tracing was secured by recording the contractions of a strip removed from a non-pregnant uterus, showing extensive myomatous involvement. Even after two hours' immersion in the warm, oxygenated Locke's solution, this strip did not develop spontaneous contractions. A second sample of the fluid-extract of ergot was employed in this case; a measured amount of the fluid-extract was evaporated almost to dryness on a water-bath and the residue suspended in Locke's solution. It is apparent that this sample caused a single contraction of the strip, persisting about 80 seconds; pituitary solution, 1 to 2000, caused a tetanus which lasted for ten minutes, after which the solution was changed.



4. Pregnant human uterus: Removed at term Caesarian section. Fundic strip. Oxygenated Locke's solution, 37 °C. At first signal immersed in pituitary solution; 1 to 1000 in Locke's solution; at second signal, plain Locke's solution. Time intervals, 1 minute.

These results harmonize quite well with those of the previously reported experiments on the uteri of cats and dogs, indicating clearly that pituitary solution is even more prone than ergot to cause a persistent contraction of the uterus. Absolutely no basis could be found for the statement that low concentrations of pituitary solution stimulate normal contractions of the uterus; in these experiments, any effective dose led to the increase in tone which was equivalent to tetanus.



5. Non-pregnant myomatous uterus—hysterectomy. Fundic strip. At first signal, immersed in Ergot suspension, 1 to 1000. Increase in tone persisting 80 seconds. At second signal, immersed in pituitary, 1 to 2000. Tetanus persisting as long as strip was in solution.

This effect of pituitary solution on the isolated human uterus serves well to

explain the unfortunate results that have followed the clinical use of the drug; the persistent increase in intra-uterine pressure acting deleteriously on the child, and also tending to produce perineal lacerations or even uterine rupture. That such results invariably follow the use of pituitary solution is disproved by the many cases where the administration of the drug does no harm; the fact remains, however, that in patients where all the indications were present and where the attendant possessed undoubted skill, the employment of pituitary solution has, too often, led to serious or even fatal results to mother, child, or both.

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LABORATORY OF PHARMACOLOGY,
MEDICAL COLLEGE OF VA.

THE ASSAY OF MINNESOTA AND OTHER SAMPLES OF DIGITALIS.*

BY E. L. NEWCOMB AND E. B. FISCHER.

It has been customary for us to record each year the results of the assay of digitalis produced in Minnesota. These results are not reported to the Association each year, but we have attempted to present them all at one or another of the meetings. This year the results obtained in 1922, 1923, and 1924 crops are given; these include not only the assay of the official digitalis, but also of the leaves of *Digitalis lutea*, which we are growing in considerable quantities. The summary for many tests made each year are reported.

The U. S. P. official method is the biologic one, involving the use of frogs. The method in the present Pharmacopœia will be included in U. S. P. X. This official method has been used by us for a number of years, and determines the toxicity of the drug very well. Many pharmacologists believe that the official assay method probably is not a true index of the therapeutic value of digitalis; it is a test of the amount required to kill a frog. Some hold that the toxicity is directly comparable with the therapeutic value of the drug; work which others have done shows it does not always indicate the true therapeutic value of samples of digitalis.

In our work we have been endeavoring to develop a method which would more accurately measure the therapeutic value of the digitalis. Its general effect is to lower the rate of the pulse and increase the blood pressure. If we can develop a method which will accurately give us the measurement of the percentage of reduc-

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* Read before joint meeting Northwestern Branch, A. PH. A., and Minnesota Pharmaceutical Association.

tion of the pulse, or the increase in blood pressure, we will have a measure of the therapeutic quality of digitalis.

There are many things that will kill animals used for biological work besides digitalis. One might take digitalis which contains certain impurities, even in minute quantities, and produce the death of the frog with heart systole, but such would not be a measure of the therapeutic value of the digitalis.

Another method used in standardizing digitalis is the guinea-pig method. Gold fish have been used; a certain dilution is placed in a given quantity of water in which they are swimming, and the gold fish will rapidly succumb. In addition, cats have been used for standardizing digitalis. The method of employing the cat, which was first used in Europe some years ago and introduced into this country by Dr. Hatcher, of Cornell University, involves the introduction of digitalis in the form of an infusion or dilution of the tincture into the femoral vein. As used by Dr. Hatcher and other workers since, it was a toxicity method where the minimum amount required to produce death within one hour or longer period of time was considered as the unit of activity of the digitalis.

During the war, we used several hundred cats in standardizing the drug supplied by the College of Pharmacy to the Army and Navy both in this country and abroad. We made quite a good many observations. We found it was possible to determine a certain percentage of reduction of the rate of the pulse, but there were difficulties because of the normal variation in the cat's pulse; animals will vary just as human beings in normal pulse rate. The variation in the cat is apparently more than in the human being, and the animal is likely to show quite a variation under the test.

During recent years we have been studying that particular factor in an endeavor to fix, if possible, a normal pulse rate for the cat for a given experiment. If we can do that and then apply our digitalis, and through its action arrive at the reduction which that drug causes, we can easily calculate a percentage reduction of pulse rate for that given sample.

In recent years we have been studying the pulse of the cat under the influence of ether for a longer period before beginning the injection of the digitalis. We are beginning to secure some figures which we hope will enable us to evolve a method by means of which we can express the activity of a sample of digitalis—not simply the amount required to kill the cat, but showing the percentage reduction of the pulse rate.

All of these tests involve the use of more than one animal, because of idiosyncrasy and the variation due to the influence of other factors. The more animals one uses, the more accurate is the final result. We are not ready to give a method for determination of percentage of pulse reduction, but we are working along that line. We mention it at this time because our studies do indicate we need something more than the toxicity test for digitalis. Many workers have found samples which were not potent or exceedingly toxic, and yet gave splendid reduction in pulse. There appears to be a therapeutic quality which is not so toxic as the other principles.

Digitalis is a very active agent in reducing the pulse rate of the cat. The different glucosides present similar properties, and digitoxin is more toxic than the other glucosides. Whether those samples which bring about reduction of the pulse

are not toxic, is based on the difference in the proportion of these glucosides—we do not know; but it would seem to be a logical explanation.

Our present assay methods are not as satisfactory as we wish them to be; studies on other species of digitalis are being conducted. *Digitalis lutea* is being employed in the work to a considerable extent; it compares favorably in all methods of assay with the official leaf. The plant does not yield as large an amount of leaves per plant as *Digitalis purpurea*. Earlier, it was supposed that *Digitalis lutea* had advantages over *Digitalis purpurea* because it was not so emetic; later work has not proved that claim. The emetic properties are due, primarily, to digitoxin which acts directly on the vomiting center. The work of earlier pharmacologists on this point has been criticized because they made their observations on the operating boards, and under the influence of ether, under which conditions animals rarely will show emetic symptoms, even when strong emetic drugs are administered. It is doubtful whether *Digitalis lutea* really possesses distinct advantages over the official product.

The results in 1922 on the carefully dried leaves of *Digitalis purpurea* showed the minimum lethal dose administered by the cat method, intravenously, was 77 mg. per kilo of cat. This represents an average of the whole series of tests.

In 1923, the minimum lethal dose was 76 mg. on a series of cats.

In 1924 on a series of animals it was 72 mg.—slightly more active than preceding years.

ASSAY OF MINNESOTA AND OTHER SAMPLES OF DIGITALIS.

Digitalis purpurea No. 40 powder—University of Minnesota 1923 Crop.

	Weight.	Sex.	
Cat No. 1	1.920 kilos	Female	80.7 mg. per kilo
Cat No. 2	2.550 kilos	Male	66.2 mg. per kilo
Cat No. 3	1.435 kilos	Male	84.0 mg. per kilo
Cat No. 4	1.850 kilos	Male	73.3 mg. per kilo
		Average.....	76.0 mg. per kilo

Digitalis purpurea No. 40 powder—University of Minnesota 1924 Crop.

	Weight.	Sex.	
Cat No. 1	4.155 kilos	Male	74.6 mg. per kilo
Cat No. 2	2.640 kilos	Female	81.1 mg. per kilo
Cat No. 3	2.160 kilos	Male	60.0 mg. per kilo
		Average.....	71.6 mg. per kilo

Digitalis lutea No. 40 powder—University of Minnesota 1924 Crop.

	Weight.	Sex.	
Cat No. 1	1.695 kilos	Male	80.0 mg. per kilo
Cat No. 2	1.695 kilos	Male	71.4 mg. per kilo
Cat No. 3	1.305 kilos	Male	67.8 mg. per kilo
		Average.....	73.1 mg. per kilo

Minnesota Digitalis—Grown near Lake Minnetonka.

Digitalis lutea No. 20 powder—1923 Crop.

	Weight.	Sex.	
Cat No. 1	3.580 kilos	Male	65.8 mg. per kilo
Cat No. 2	2.310 kilos	Female	63.0 mg. per kilo
Cat No. 3	2.980 kilos	Female	58.0 mg. per kilo
		Average.....	62.3 mg. per kilo

Digitalis lutea No. 40 powder—1924 Crop.

	Weight.	Sex.	
Cat No. 1	3.225 kilos	Male	76.0 mg. per kilo
Cat No. 2	2.605 kilos	Female	79.4 mg. per kilo
Cat No. 3	1.505 kilos	Male	74.0 mg. per kilo
		Average.....	76.5 mg. per kilo

Digitalis purpurea No. 20 powder—1923 Crop.

	Weight.	Sex.	
Cat No. 1	2.210 kilos	Male	74.4 mg. per kilo
Cat No. 2	2.825 kilos	Female (n. p.)	60.0 mg. per kilo
Cat No. 3	2.750 kilos	Female (n. p.)	68.0 mg. per kilo
		Average.....	67.5 mg. per kilo

Digitalis purpurea No. 100 powder—1923 Crop.

	Weight.	Sex.	
Cat No. 1	2.010 kilos	Male	85.5 mg. per kilo
Cat No. 2	4.655 kilos	Male	75.2 mg. per kilo
	Coarse powder.		
Cat No. 3	2.930 kilos	Male	71.0 mg. per kilo
		Average.....	77.2 mg. per kilo

We have had difficulties in obtaining a sufficient number of test animals. While three of the four animals run on the 1924 test gave close results, the fourth was considerably off, apparently due to the use of an animal entirely abnormal to the action of digitalis. With a larger number of test animals on hand, we would have repeated this test, because there is quite a disparity between the figures 72 and 76.

We are studying this whole question with a view of determining whether seasonal variations—temperature, moisture, etc.—have any bearing on the variation in the activity of the drug. It would appear there is not very much variation, although this work, in order to draw conclusions, must extend over a period of years, where we have exceedingly dry periods and exceedingly hot or cold summers. Heretofore we reported on the collection and assay of digitalis by months for the entire year. Our reports show there is little variation between the middle of the summer, when the plants reach maturity, and the first of December, when they are frozen and covered with ice. Freezing the leaves does not injure them.

The use of digitalis by the pharmacist will undoubtedly continue for many years. It is one of our most important drugs.

We want to say a word about the making of the official infusion. The old method was to use the bruised leaf. Where the word "bruised" came from we do not know. Apparently it has been handed down from the time when the apothecary used the fresh leaf. If you try to bruise the dry leaf, you produce a powder; the word is not properly used; its application originally was apparently to bruise a fresh, green leaf, and then apply hot water. If one attempts to make an infusion from the whole drug, which is composed of broken parts of the leaf, it will be found in weighing out three or four grams that it is difficult to get a uniform sample—there are portions of the midrib and the petiole and the lamina part. The midrib and petiole contain only one-fourth of the activity of the lamina portion of the leaf. Two or three pieces of the petiole will weigh more than remaining part required to make up the weight.

It is exceedingly difficult for any pharmacist to take a broken or dried digitalis leaf and weigh out five or six lots and have them represent the same amount of

activity of the digitalis. If you are going to put out an infusion of digitalis, uniform in therapeutically active constituents each time you fill a prescription, you must have the drug in such a form that you can withdraw uniform samples.

In the new Pharmacopœia instead of specifying that one shall use so much of the bruised digitalis, it is directed that one shall use so much of the No. 60 powder. One may withdraw typical samples, each of which will represent practically an identical amount of the therapeutic qualities in the drug.

The old method also directs to strain the infusion. If one uses a No. 60 powder, the strainer must be very fine. The best procedure is to weigh out the digitalis in powdered form; introduce hot water and allow it to stand, and then filter it. We do not know whether the change from the whole drug to the powdered drug is going to make the problem of the pharmacist in supplying the official infusion any more difficult than to use the whole drug. Certainly every pharmacist can quickly tell the difference between a nice whole digitalis leaf and one which is of inferior quality.

In the future you are going to have the powder to work with. What will you do about determining the quality of the powder? We want to issue a word of warning about powdered digitalis which is brown or gray. If prepared from select green leaf, it should be of a nice, rich, green color. If it is, you may rest assured a preparation made from it, providing it has been standardized, will give an infusion which will give the result the doctor has a right to expect.

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THE TANNIN OF RHUS GLABRA.*

BY JOSIAH C. AND BERTHA L. DEG. PEACOCK.

The title "Rhus Glabra," previously used by the United States Pharmacopœia to designate the fruit of that plant, is now employed for the same purpose in the National Formulary by which authority the drug is recognized.

That *Rhus glabra* contains an astringent principle—a tannin—has long been known, and on the recognition of this quality it has found use.

This drug has been the subject of several investigations, references to which were given by Henry Kraemer in *American Journal of Pharmacy* for September 1913, in an article explaining that in commerce the fruit of *Rhus glabra* was being replaced by the fruit of *Rhus typhina*, and, in which paper, besides summarizing the reports of those who had contributed to an understanding of the constituents, he gave means for distinguishing these fruits by examining their hairs under the microscope.

As mentioned by Kraemer, Watson in 1853 (*Amer. Jour. Phar.*, p. 193) published the results of his examination of the fruit of *Rhus glabra*, substantiating earlier statements by Cozzens and Rogers, the first of whom was concerned chiefly with establishing the presence of gallic and malic acids, while the latter pertained more to determining the form in which the malic acid occurs.

It is mainly on the statements of Watson that the references to the constituents of *Rhus glabra* found in the books which American pharmacists study and consult are based.

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* Read before Pennsylvania Pharmaceutical Assoc., Washington, Pa., June 16–18, 1925.

The experiments of Stenhouse, to which Kraemer referred, were not made on *Rhus glabra* nor on any other of the species of Rhus dealt with by Kraemer, but on what is known in the leather industry as "sumac" of commerce, which is the ground leaves and twigs of *Rhus coriaria*, obtained usually from Southern Europe.

While from that date the belief that the tannin of this drug is gallotannic acid has not only held but has been strengthened, as for instance by the work of Trimble in 1892 and 1894 (reported by J. C. P. in *Amer. Jour. Phar.*, 1900, p. 334), still until now the tannin of the fruit of this particular species has not to our knowledge been isolated and purified as a means of studying it apart from its association with other constituents of the drug always present in the decoctions and only by use of which *Rhus glabra* has heretofore been observed.

This tannin has engaged our attention for some years past; there has long existed the desirability of knowing more definitely its nature and thereby supplementing the results of Trimble's work which showed by ultimate analysis and otherwise that the tannin in the several plant parts of the related species investigated by him is gallotannic acid. Again, in the exigencies of some recent work on the iron-greening factor of digitalis, it occurred that *Rhus glabra* might afford opportunity for studying the isolation and purification of a tannin associated with crystalline acid substance; and, since the presence of some crystallizable acids or of caffeine has been found by us to militate against the securing of tannins in porous or "puffed" condition, there was the thought that possibly experience might be gained with *Rhus glabra* which would be helpful in further consideration of the digitalis problem reported to this Association a year ago.

To find a solvent, or means, that will select either the tannin or the crystallizable substance and thereby enable separation is, in every such instance, obviously necessary as the only hope of effecting the purification of the tannin.

In this report, we confine our consideration almost entirely to the tannin, giving outlines of the methods used to isolate and purify it; but, because of the intimate interest which directs attention to gallic acid, the matter of its presence in sumach berries has been given thought, for some of the reference books used by American pharmacists do not mention gallic acid as present.

The drug used for this work was taken from a market lot. After maceration of a portion in glycerin for twenty-four hours, it was compared microscopically with Kraemer's drawings of the hairs of the fruits of the species *glabra*, *typhina* and *glabra borealis* and found to be both genuine and unmixed.

The sensible properties of a decoction of sumach berries and its behavior toward iron test solutions, while well known, are mentioned in order to contrast certain effects which were noted in this work.

A rich red, freshly prepared, ten per cent decoction gave with ferric chloride test solution a strong bluish black color and precipitate, that upon addition of an excess of the reagent became greenish black. With gelatin solution, the decoction produced an abundant pinkish or deep flesh-colored precipitate; and with lead acetate a drab precipitate.

In contrast with these effects, when another portion of the same decoction was mixed with enough well-washed rasped raw-hide to give a jelly-like consistency, and this mixture was allowed to stand for two hours, the expressed liquid, after filtration, was found to be colorless, free from astringent taste, to give but a slight,

if any, color with ferric chloride or ferric acetate solution beyond that of the reagent itself, and no precipitate with gelatin solution.

When this experiment was repeated, keeping the decoction in contact with the hide for but one hour, the result was the same. It was then found that, as soon as the color had been absorbed by the hide, the behavior of the filtered liquid toward ferric compounds and the other reagents was as stated for the two-hour contact.

Because of the absence of a reaction by the hide-treated decoction with ferric chloride and ferric acetate, there is reason to believe that gallic acid is not present in more than a minute amount, if at all. Furthermore, realizing that such small amounts might have been absorbed, the experiments were repeated using decoctions to which trifling quantities of gallic acid had been added. In every such instance, the filtered liquid from the hide treatment gave the characteristic blue color for gallic acid with both ferric chloride and ferric acetate, and, by comparison with a water solution of the same strength of gallic acid, no diminution of intensity of color reaction was manifested to indicate that any gallic acid originally present in the decoction had been removed by the hide.

When some of this same lot of decoction was allowed to stand for several days, by which time it usually became moldy, and was then treated with hide in the same way, the filtered liquid immediately showed the characteristic blue color with ferric chloride and ferric acetate indicating gallic acid and suggesting its presence as an alteration product of the tannin. (When the description of Watson's isolation and recognition of gallic acid in *Rhus glabra* is read with definite knowledge of the tannin and acid constituents of *Rhus glabra*, it is plainly evident that the latter furnished the crystalline form and the former the color reaction with iron salts; from which two observations he inferred the presence of gallic acid in accordance with earlier writers on this drug.)

But repetitions of this experiment with different lots of decoction showed no constancy in either the production or the amount of gallic acid.

Therefore, contrary to some authorities, it would seem that gallic acid is not a constant, if indeed ever a considerable, constituent of sumach berries, although it may at times be found in decoctions which have stood for several days.

In all of the filtered liquids from the hide treatments, there was acidity markedly demonstrable with litmus paper, and these liquids still gave precipitates with lead acetate, although now white and of much less amount.

All but three per cent of the titratable acidity of the decoction was retained by the hide.

The absorption of malic acid by hide was mentioned by Trimble, where cited and in same for 1903, p. 343 (reported for him by William E. Ridenour).

Turning now to the isolation and purification of the tannin, trials were made on small lots of sumach berries using for each an equal portion of the drug. Decoction with water and percolations with ether and acetic ether were the three variations of these efforts. These three solvents removed substances other than tannin; all took out the tannin about equally well, but none gave more than a small yield.

When ether or acetic ether was used on the drug, fat was extracted, but it was readily got rid of by evaporating these solvents and treating the residue with water, pulping with paper and filtering. Also, small quantities of matter suggesting resin

were thus removed, with production of brilliant solutions which could be diluted with water without producing turbidity.

Solutions of gallotannic acid, if not too dilute, form with ether a milky turbidity that soon becomes droplets which coalesce and settle as a subnatant layer. This formation approximates a saturated solution of the tannin in water-saturated ether. This behavior, which has not been observed with any other tannin and is therefore regarded as peculiarly characteristic of gallotannic acid, was soon noted as an attribute of the tannin of *Rhus glabra*. As long ago as 1837, advantage was taken of this behavior by Pelouzé as a step in the preparation of commercial gallotannic acid from galls. We made use of it in this work, but with little if any benefit through it serving to separate other constituents; a supernatant layer of ether, or ether quickly applied to the "puffed" tannin in process of purification, seemed as hereinafter mentioned in detail, much more effective in that capacity as evidenced by the relative amounts of non-tannin which were removed. And following such method of purification, shaking out from a water solution with acetic ether was done to obtain the tannin in "puffed" or porous form.

When ether is applied to porous *Rhus glabra* tannin, even when quickly done, the tannin at first acts as though it would not be soluble, but soon the rapidly evaporating ether has brought about condensation of sufficient moisture from the atmosphere to change this aspect, and solution becomes unmistakably evident, with eventual fulfillment of this tendency; in actuality this behavior is nothing more or less than the properties recognized and utilized by Pelouzé, merely somewhat differently induced.

Neither chloroform nor benzol applied to either the porous crude tannin or its solution in water were helpful as purifying agents.

Extraction of the fruit with hot water, concentration of the resulting extract and shaking out of this liquid with acetic ether as the primary process for securing the crude tannin was decided upon as the method to be applied to a two kilo. lot of the drug. And thus obtained from the concentrated decoction, the crude tannin was purified by the processes already outlined and as follows: repeated solution of the substance in water, dilution to a degree that permitted the aqueous liquid to be shaken with ether without formation of a water-ether-tannin layer, and subsequent removal of the tannin from the water solution by agitation with acetic ether. These several treatments were repeated until all appreciable non-tannin had been removed and the color, texture and solubility in water of the tannin seemed constant.

With the non-tannin, some tannin always went, so that the purification was a wasteful method, although in other respects quite satisfactory. Nowhere in these processes was evidence of gallic acid revealed.

The specimen of tannin from *Rhus glabra* that is shown to this meeting represents as high a degree of purity as was attained. Except for a tendency toward tan color, the properties of this tannin are those recited by the United States Pharmacopœia as requirements for the official tannin or gallotannic acid; for otherwise it complies, in form, odor, taste, solubilities, acidity and miscibility of aqueous solution, behavior toward ferric chloride, gelatin, albumen, starch and alkaloids, limit of moisture, and freedom from non-volatile matter, to the text of the Pharmacopœia; which may therefore be taken as description of the tannin of *Rhus glabra*.

This tint of tan is not native to the gallotannic acid of commerce which comes from material devoid of red coloring, but which frequently bears a tinge of the green incident to its source.

But whether this tan color is or is not due to the red color of the drug is a question that has not been settled. Bearing upon the matter, it is noteworthy that this color tends to remain in the mother-liquor as the tannin is reclaimed from solvents through evaporation of these by distillation, even under reduced pressure; also, that during these processes, up to the point of moderate concentration there appears on the flask at the edge of the boiling liquid a porous, almost snow-white, residue as the first portion of the tannin to separate from the lessening bulk. But, without interruption, the evaporation of the solvent must be carried to completion *in vacuo* in order to get a porous or even a dry product; since, otherwise, upon admission of air to the flask, the vapor of the solvent condenses to liquid and immediately dissolves the white mass of tannin. There appears to be no simple way to get a dry and permanent tannin except to sacrifice this whiteness, which, for its duration at least, indicates a tannin of commensurate purity; for with the volatilization of the last of the solvent, the red color, which until then has kept to the mother-liquor, instantly spreads throughout the entire contents of the vacuum flask. Inferentially, there is at least that much reason to regard the tannin of *Rhus glabra* as white, which is typical of a state of purity to which gallotannic acid has been brought by others and ourselves.

That this tendency to redden is not due to formation of a phlobaphene was several times demonstrated by use of mineral and vegetable acids on appreciable amounts of the tannin. It is our impression that this tinge of red will be traced to the same coloring in the drug.

Under the effect of diluted sulphuric acid, as in the customary process of preparing gallic acid from gallotannic acid, the tannin of *Rhus glabra* yielded a white, crystalline, acid substance in interlaced needles that responded to tests characteristic of gallic acid. (A small sample of the gallic acid thus made is exhibited.)

In view of the properties exhibited by this tannin it must be regarded as gallotannic acid, which Trimble showed to be the tannin in the several plant parts of the closely related species of Rhus that he investigated.

That conclusion having been reached, and freshly prepared decoctions having failed to show gallic acid, it was decided to subject some of the decoction to dialysis, primarily to learn whether the crystalline, vegetable acid substances present in the drug might have an exosmotic effect on the tannin, and, secondarily, as a further test for any gallic acid possibly existent in the drug.

Accordingly, a portion of ten per cent decoction was placed on a septum, and after twelve hours the outside liquid was tested with ferric chloride and ferric acetate, neither of which showed more than a faint green color in the liquid; but these tests upon addition of a drop of a weak solution of gallic acid gave at once the characteristic blue color. The liquid on the diaphragm had retained its strong reaction to these iron compounds. The outer liquid was already acid to litmus, showing that the crystalloid acids of the drug were diffusing through the membrane, and the successive lots of this liquid exhibited acidity up to the last portion, which was free from acid reaction to litmus. This examination with ferric salts and litmus

was made every twelve hours; and at the end of eighty-four hours, the characteristic blue color reaction of gallic acid was, for the first, observable, also, the liquid was without clouding effect on gelatin solution. The fluid on the membrane still possessed semblances of the decoction which it represented, including an ability to precipitate gelatin solution.

The next thirty-six hours revealed an increase in this evidence of gallic acid formation from the tannin, and then a decrease, until a test made at the end of five days and twelve hours proved that no more gallic acid was passing. At this juncture, examination of the fluid on the septum found it to be without iron-bluing effect, although at once coagulated by either iron chloride or iron acetate solution.

This residuum was without the acidity to litmus and the astringent taste which marked the decoction; and it had lost practically all of the original red color.

Repetitions of this experiment gave the same final result, but varied greatly in the length of time required for both the initiation and the progress to completion of the change to gallic acid.

These experiments proved to be unusually interesting, as they quite conclusively explain the occurrence of any gallic acid found in decoctions and other aqueous preparations of this drug. These experiments also show that gallotannic acid is not conducted through the septum by the crystalline acid substances associated with it in *Rhus glabra;* in these instances, it changed to gallic acid, which passed through as crystalloids normally do.

It is therefore plain to be seen that gallic acid may sometimes be present in *Rhus glabra*, since it is possible of derivation from the tannin through changes likely to occur in the drying or curing of this drug; but, if present as such result, it will probably be in very minute amount. And for these reasons, statements of its presence should be qualified accordingly.

These dialytic experiments were made also on weak solutions of purified *Rhus glabra* tannin, and of a purified sample of commercial gallotannic acid, but without crystalline acids. The results were concordant in so far as the tannin from either source was concerned, both paralleling the behaviors noted for the decoction, with variations in time required for the change to gallic acid and its diffusion.

Finally, though this investigation of the tannin *Rhus glabra* has shed but little light on the digitalis problem to which reference has been made, the isolation and purification of the tannin have added something of certainty to our understanding of this constituent, and of its deportment in aqueous solution, by definitely confirming what until now was but the assumption that this tannin is gallotannic acid. And, to that extent, when such astringent is needed and circumstances permit, this knowledge justifies the present-day inclination to use official tannin in definite amount for dependable activity, instead of decoctions of drugs of the uncertain strength that attaches to sumach berries. If wanted, malic, citric or tartaric acids may be added to such tannin solution to give it the acidulous palatability that is so commonly stated as an advantage to be had from *Rhus glabra;* and a pleasing color may be imparted with suitable tinctorial substance. With such dispensing ability available to the physician, there seems to be neither need nor good reason for employing *Rhus glabra.*

THE INFLUENCE OF CLIMATIC CONDITIONS ON THE YIELD AND QUALITY OF OIL OF MENTHA ARVENSIS, VARIETY PIPERASCENS.[1]

BY G. A. RUSSELL[2].

INTRODUCTION.

The volatile oil of the plant *Mentha Arvensis*, variety *piperascens* occurs principally in the leaf area, the proportion of the leaf oil to stem oil being as 1 is to 28. The function of this oil in the plant's life processes is not well understood. The generally accepted view is that it is waste product formed in the course of plant's metabolism and stored in special cells. Tschirch and Tunnmann, however, have made extensive studies of the functions of volatile oils in plant growth and consider that the oils are built up to serve quite definite purposes. Whatever the view taken the fact remains that in the case of *mentha arvensis* cultivated in various parts of the United States varying yields of oils were secured having varying compositions.

My study of the causes for these variations has revealed little information of a reliable nature. I have been able to form conjectures and to draw certain inferences but have not been able to arrive at definite conclusions. It appears from a study of the literature on the oil of another mint, *mentha piperita*, that several views can be taken as to the cause or causes of variation in the composition of the oil, all of which can be supported by experimental evidence. I have a strong inclination toward the theory that intensity of light and temperature have greater effects on the composition of oil of *mentha arvensis* than do soil, humidity, rainfall and other factors.

All the investigations, thus far, have been from the commercial point of view although it is fully realized that academic investigations are of the utmost importance. The propagating material has been so limited that all our endeavors have bent mainly to the securing of more planting stock, studying at the same time locations where this mint might be produced advantageously. It is from these studies that I have formed a semi-definite conclusion as regards the effects of intensity of light and heat.

My study of *mentha arvensis* began in 1922. At that time I was connected with the Office of Drug Plant Investigations of the Federal Department of Agriculture. The consuming menthol trade became interested in the domestic production of menthol and a coöperation was effected between the office above mentioned and the Vick Chemical Company of Greensboro, N. C. The information secured by means of this coöperation is available through the Department of Agriculture. It is public information for the use of any citizen of this country.

EXPERIMENTS.

In 1921 a single plant of *mentha arvensis* variety *piperascens* having been secured, cuttings were made in a quantity sufficient to plant a small area in 1923. The following year a greater number of cuttings were secured so that experimental plantings could be extended into several localities. In 1925 these experimental plantings have been extended so that at present several acres are under cultivation.

[1] Read before the Scientific Section, N. C. Pharm. Assoc., Blowing Rock, June, 1925.

[2] Chief of Research Department, Vick Chemical Co., Greensboro, N. C.

The data in this paper were secured in 1922 and 1923. The strain of mint was kept pure throughout the period.

In 1922 planting was made at Arlington, Va. The oil secured that season assayed 18 per cent combined menthol and 70.69 per cent free menthol. The crop was harvested on October 12 long after full bloom and when the plants were much past their prime. It has never been satisfactorily explained what was the cause of the high esterfication. It may have been due to maturity of the plant or to many other causes. The fact that never thereafter, when the crop was harvested at the proper time, was an oil secured with such a high ester content, leads me to attribute this yield to maturity of the plant rather than to other causes.

In 1923 plantings were made at Arlington, Va.; Greensboro, N. C.; Junction City, Ore.; Seneca Falls, N. Y.; Florence, S. Carolina and South Bend, Ind. These localities were selected for various reasons and represent a wide diversity in soil and climatic conditions. The plantings were all made from stock grown in a greenhouse, hence, were as nearly identical at the start as was possible. The results of yield of oil, esters and menthol are given in Table I.

TABLE I.—RESULTS SECURED ON MENTHA ARVENSIS.

Location.	Date Planted.	Date Harvested.	Yield oil dry herb %.	Combined menthol in oil %.	Free menthol in oil %.
Arlington, Va.	April 24	August 29	1.29	9.42	70.87
Greensboro, N. C.	April 19	July 19	1.76	4.33	73.70
Junction City, Ore.	March 30	August 11	1.36	4.23	65.57
Seneca Falls, N. Y.	May 16	Sept. 15	1.30	5.29	77.61
Florence, S. C.	April 21	Aug. 1	1.60	4.74	71.07
South Bend, Ind.	May 3	Sept. 7	1.47	5.71	77.73

I have made no attempt to explain the variations in the above table. The crop from Junction City, Ore. must be eliminated from consideration since the herb heated in transit, no doubt vitiating the results. It is of some interest, however, to note any relationship between results obtained on the oil and geographic or climatic factors. Accordingly Table II has been prepared showing type soil, latitude, elevation and some climatic averages.

TABLE II.—CERTAIN FACTORS WHICH MAY HAVE A BEARING ON THE RESULTS AS GIVEN IN TABLE I.

Location.	Elevation feet.	Approximate latitude.	Annual mean temperature F.	Annual mean precipitation In.	Annual mean clear days.	Growing days of crop.	Soil type.
Arlington, Va.	50	38.45°	54.7	40.8	129	128	Heavy Clay
Greensboro, N. C.	843	36°	53.2	47.96	152	91	Sandy Loam
Seneca Falls, N. Y.	836	42.45°	47.2	31.47	82	122	Muck
Florence, S. C.	136	30.25°	63.2	44.92	130	103	Sandy Loam
South Bend, Ind.	726	42°	48.2	33.46	139	127	Muck

No correlations can be drawn from the data on Table II except between ap-

TABLE III.

Location.	Approximate latitude.	Total menthol.
Florence, S. C.	34.25°	75.81
Greensboro, N. C.	36°	78.03
Arlington, Va.	38.75°	80.29
South Bend, Ind.	42°	83.44
Seneca Falls, N. Y.	42.75°	82.90

proximate latitude and total menthol content. This correlation is presented in Table III.

It will be observed from this tabulation that the total menthol content varies directly with the approximate latitude. These are the data that support my theory that intensity of light and temperature exert a decided influence on the total menthol content of the oil of *mentha arvensis*. This theory is further supported by the result of a planting, not under my supervision, of *mentha arvensis* of the same lot as those above made in Florida, Lat. 28.5°, the oil of which assayed 57.6% total menthol.

Further experimental evidence was obtained at Arlington, Va., in 1924, where a portion of the crop was grown under partial shade. The type of soil was practically identical, perhaps somewhat more fertile under the slat shade than in the open. The shading amounted to cutting out about fifty per cent of the sunlight. The crops were harvested when in full bloom but that under the shade did not mature until twenty-two days later than the crop in the open. The total menthol content of the oils from these crops was, for open cultivation 75.2 per cent and for shade cultivation 85.41 per cent. The combined menthol was 9.97 per cent and 8.78 per cent. Whereas this is only one experiment the data obtained bears out the supposition that intensity of light and temperature have a marked influence on the composition of oil of *mentha arvensis*.

A very brief experiment carried out by a co-worker in the Department of Agriculture is of special interest in connection with the work presented in this paper. Four potted plants were on May 9, 1923, transplanted when six inches high into large buckets. These plants were all at the same stage of development. They were treated as follows: No. 1 was used as a control and remained out doors, No. 2 was given a 12-hour day of sunlight, No. 3 a 10-hour and No. 4 an 8-hour sunlight day. A rather remarkable result was obtained. Thus on July 2, 55 days after the plants had been replanted, but 180 days after they were started in the greenhouse, No. 1 had attained a height of 16 inches, was in bloom, was branched but the branches were short and no surface runners had appeared. Plant No. 2 was about 16 inches high, was in bloom, had branches 6 to 10 inches long and surface runners were nicely started. Plant No. 3 was approximately 20 inches high, had no signs of buds, was much branched with branches 10 to 18 inches in length, and possessed many runners, some 23 inches long. Plant No. 4 was 18 inches high, had no signs of buds, was much branched with branches 10 to 15 inches long, and had numerous runners, some 22 inches long.

Naturally no distillation of these single plants was possible, hence any inference as to character of the oils which might be drawn is purely theoretical. It is believed, however, that in the view of the other results recorded here, the plant subjected to a 10-hour day of light would have yielded an oil high in menthol. This plant certainly attained the best growth and in odor, size of leaf and other characteristics was by far the most promising of the lot.

Such studies as these have economic as well as a purely scientific aspect. From them we can recommend experimental plantings of mint in certain sections and discourage them in others. It is thus possible to save time and energy and to concentrate on production in sections where we feel sure the production of menthol in the oil will be increased through the proper intensity of light and heat.

NOTES ON PEPSIN PREPARATIONS.*

BY C. C. GLOVER AND C. G. FUSS.

This work on Pepsin solutions is largely a continuation of the investigations carried out in the same laboratory during the past two or three years.[1]

Some interesting observations recently have been made upon the rate of deterioration of various preparations containing pepsin. These observations have been extended, assays being repeated so that the curves show the deterioration of pepsin in the solutions over a period of three years. The results are fully shown on Graph Table No. 1. Preparations in which the pepsin strength had already fallen off so much that it was practically negligible were not assayed. In all cases the method of estimation was that of the U. S. P. IX with the slight modifications and use of controls of a known pepsin as described in a previous report.[1] The known pepsin used was one whose value had been determined by running about eighty assays upon it following closely the directions as given in the U. S. P. IX.

A number of preparations previously made up using different amounts of acid from those called for in the official methods of manufacture had shown some apparent relations between the acidity and rate of deterioration. These preparations were therefore assayed twice during the past year and their deterioration curves over the entire period are shown on Graph Table No. 2.

In view of the fact that these preparations of different acid strengths show deterioration which seems to be influenced by the amount of acid present, it was decided to study this possibility more closely. A preparation of pepsin was chosen which previous investigations had shown to deteriorate very rapidly.

Six samples of Liquor Pepsini N. F. IV were made up with varying amounts of acid according to the following formulæ:

LIQUOR PEPSINI.

		Deterioration after 5 months.
No. 1.		
Glycerite of pepsin	25 cc.	2575
Hydrochloric acid	5 cc.	
Glycerin	157.5 cc.	
Water q. s.	500 cc.	
No. 2		2475
As above except		
Hydrochloric acid	4 cc.	
No. 3		2420
As above except		
Hydrochloric acid	3 cc.	
No. 4		2125
As above except		
Hydrochloric acid	2 cc.	
No. 5		1940
As above except		
Hydrochloric acid	1 cc.	
No. 6		820
As above but with no hydrochloric acid added. This preparation contained only the acid present in the Glycerite used.		

The Glycerite of Pepsin used in the above was freshly prepared and assayed and adjusted to exact strength. The six preparations above were also assayed within two days after manufacture in order to be sure of their strengths at the start.

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* Scientific Section, A. PH. A., Buffalo meeting, 1924.

[1] JOUR. A. PH. A., Vol. X, p. 595; Volume XI, p. 686.

After a period of five months these preparations were again assayed to ascertain deterioration of pepsin from the original strength of 1 to 3000.

It appears that the rate of deterioration increases with the amount of acid present. However, the total absence of acid does not seem to be advantageous as was previously shown in the case of Elixir of Pepsin (Table II). No doubt some acid is necessary in these preparations, but a very small amount seems to be the best and certainly much less than that required in the official formulas. The ultimate strengths of these may show no differences but the rate of falling off for the first few months seems to be dependent upon the amount of acid present.

PRESERVATIVES.

Previous reports of work done in this laboratory brought out the fact that samples of Essence of Pepsin containing small amounts of boric acid, chloroform, iodoform, and caffeine show no noticeable deterioration. Caffeine was used in varying amounts as small as 4.25 mg. per 100 cc. and all results were alike in showing little falling off of the pepsin strength.

A number of pepsin preparations containing various substances were therefore made up for the purpose of determining the preservative action of the added substances. These preparations were all assayed within three days after manufacture and adjusted to the correct 1:3000 pepsin strength. After six months all were again assayed with the following result:

	Assayed strength.		Assayed strength.
No. 61 Glycerite of Pepsin Caffeine, 0.01 Gm. per 100 cc.	2650	No. 67 Liquor Pepsin Sodium phosphate, 0.2 Gm. per 100 cc.	Inactive
No. 62 Elixir of Pepsin Caffeine, 0.01 Gm. per 100 cc.	1010	No. 68 Liquor Pepsin Sodium salicylate, 0.01 Gm. per 100 cc.	"
No. 63 Elixir of Pepsin Sodium salicylate, 0.02 Gm. per 100 cc.	1100	No. 69 Liquor Pepsini Methyl salicylate, 0.2 cc. per 100 cc.	"
No. 64 Elixir of Pepsin Methyl salicylate, 0.02 cc. per 100 cc.	200	No. 70 Elixir Pepsin and Bismuth Caffeine, 0.01 Gm. per 100 cc.	1350
No. 65 Liquor Pepsini No preservatives added	Inactive	No. 71 Elixir Pepsin and Bismuth Sodium salicylate, 0.02 Gm. per 100 cc.	2075
No. 66 Liquor Pepsini Caffeine, 0.01 Gm. per 100 cc.	"		

The first and last of these which showed the least deterioration were again assayed after a year and were still slowly losing strength.

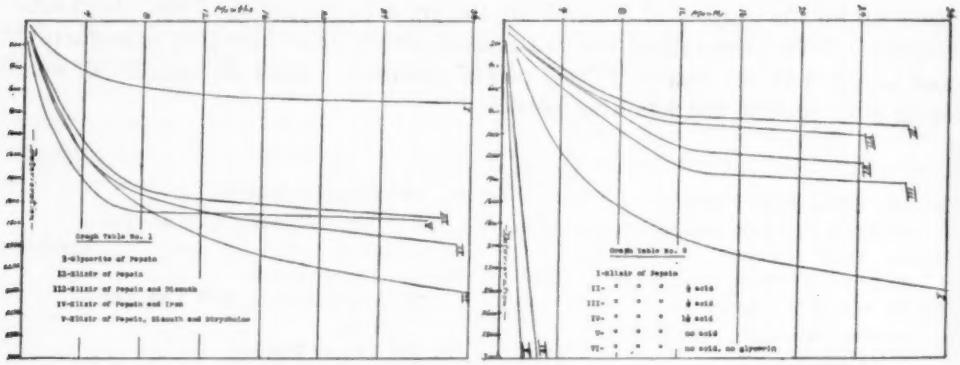
EFFECTS OF DIALYSIS OF PEPSIN.

This investigation seems to substantiate the belief that pepsin and rennin are two distinct ferments and that pepsin does have the dual property of digesting proteins and coagulating milk and that a measure of one property is a measure of the other.

Pepsin being a colloid and rennin being able to pass through a semi-permeable membrane offered a possibility of investigating these two properties of pepsin by a series of dialysis experiments. Accordingly a number of collodion sacs were

made and those of uniform thickness were used. Several samples of pepsin were used ranging from 1:2800 to 1:10,000 in strength as assayed.

It was found that the ordinary method of dialysis could not be employed because of the fact that molds began to appear in the solutions before the dialyses could be carried on any length of time. Rather than to attempt the use of any preservatives it was decided to use a method of continuous dialysis whereby the solution could be subjected to the action of a large amount of water in a comparatively short time. The method used consisted in having the pepsin solution in a beaker and immersing the collodion sac in it through which a continuous stream of water was passed. In all experiments the water used was acidified to the same strength as the pepsin preparation and a control solution of pepsin was also made up and set aside for comparison each time. After running the dialysis, both the control and the sample that had been subjected to the dialysis were made up to the same volume and acidity and portions of each were assayed by both the U. S. P. IX and "milk" methods. For a description of the milk method see previous report.[1] It was expected that if the dual property of pepsin were due to the presence of two different ferments, it would be indicated by a noticeable difference



in the relative activities in the two methods of assay. Without exception, a large number of solutions of pepsin so treated were found to have lost only a slight amount of proteolytic power and a corresponding amount of milk-curdling power. The small decrease in proteolytic power was undoubtedly due to the fact that a colloidal substance may pass through a semi-permeable membrane especially under the conditions in which this experiment was run.

These experiments, therefore, seem to point to the fact that pepsin is but one ferment, or at least that it cannot be separated into any components by dialysis, and that a measure of the milk-curdling power is a measure of the proteolytic strength.

CONCERNING THE MILK METHOD FOR THE ESTIMATION OF PEPSIN.

It has been shown that the coagulation of milk by rennin takes place in two steps. Rennin converts the caseinogen of milk into paracasein which is soluble. However, the calcium salts present in milk cause the precipitation of the paracasein as the curd, casein. The coagulation of milk by pepsin follows the same as in the coagulation by rennin.[1]

[1] Mellanby, *Jour. of Phys.*, 45, 345 (1922).

Considerable controversy has arisen at times relative to the identity of these two ferments but at present it seems well established that they are two distinctly different ferments. It has been found that both can be precipitated by magnesium salts but subsequently only the rennin precipitate is soluble. If a mixture of the two ferments be heated to 45° C., the rennin is more rapidly destroyed and eventually only the pepsin remains active. Furthermore, it has been observed that a larger amount of calcium salt is required to be present for the coagulation of milk by rennin than is needed when pepsin is used.

A method has been suggested for the estimation of trypsin by making use of its ability to curdle milk.[1] The hypothesis upon which this method is based is that the proteolytic ferments all coagulate milk provided the calcium content of the milk is suitable. Ferments which work in acid medium, such as pepsin, require only a small amount of calcium, while those that work in alkaline medium (trypsin) seem to require relatively larger amounts of calcium salts.

The method of estimating trypsin is as follows: Milk is diluted with an equal volume of $N/10$ calcium chloride solution. Two cc. of this and the solution to be tested are mixed and the volume made up to 3 cc. The time of coagulation at 38° C. is noted and from this time the quantity of ferment present is estimated. In order to make this estimation it is first necessary to construct a curve showing the time relation required for curdling to the amount of trypsin present. For the higher concentrations of trypsin the time seems to be inversely proportional to the amount of ferment present but in dilute solutions this does not seem to hold. Having once established such a curve by means of a series of actual determinations it is possible to determine the amount of trypsin present for any observed time of coagulation.

In the case of milk coagulation by pepsin it has been found that the acidity of the milk has a marked influence upon the time required for curdling, in fact, by using milk a little too old in which fermentation probably had started, it has been our experience to observe a shortening of the coagulation time to a marked degree in the course of an hour's time in the laboratory. For this reason no methods for the estimation of pepsin have been proposed other than ones comparing the time required for curdling with the time required for a standard. It has been shown that the time required for coagulation is inversely proportional to the amount of pepsin present or to the strength of the pepsin used, and that a measure of the milk-curdling power is also a measure of the proteolytic power of the pepsin as well. Traut and Vahlteich used a method in this laboratory[1] which has been found to be entirely satisfactory for the estimation of pepsin through its milk-curdling properties by comparison with a standard pepsin. The acidity of the milk should be such that coagulation is produced in about five minutes. Adjusting the acidity by the use of lactic and hydrochloric acids (2 to 1) gives a sharper end-point (coagulation) than the use of either alone.

Obviously, in assaying preparations of pepsin containing acid, there will be an error introduced if the acid is not first neutralized and then adjusted to the proper amount. This may be accomplished by the addition of a small amount of calcium carbonate until the preparation loses its acid reaction to litmus.

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[1] Mellanby and Wooley, *Jour. of Phys.*, 45, 372 (1912).

Another influencing factor in the time of coagulation is the calcium content. An addition of calcium salts was found to shorten the time required for coagulation but no definite relationship could be observed between the amount of calcium added and the change in time required for coagulation. The addition of oxalates to the milk also has been found to lengthen the time period due to its precipitation of calcium. With both the acidity and calcium content of milk influencing the time of coagulation, it seems that the use of milk for estimating pepsin will have to be one of comparison with a standard since acidity and calcium content are variable and the control of calcium content meets with many difficulties.

It has been shown that three essential factors influence the curdling of milk by pepsin. Casein, calcium salts, and acid seem to be essential. This offers an opportunity of preparing a standard reagent to be used for the assay of pepsin. Casein dissolved in lime water, for instance, and having some other calcium salts present in solution and sufficient acid strength can be coagulated by pepsin. However, the coagulation is not sharp and well defined as in the case of milk. The curd tends to come out in a few large slowly appearing pieces instead of the smaller particles that appear so well defined when milk is used. It is quite possible, however, that this method may be developed into a useful one. Some changes in acidity and calcium content as well as the concentration of casein are suggested as possible means of improving the end-point appearance.

For the preparation of casein there are a number of methods available. One using milk diluted with 3 to 5 times its volume of water and precipitated with acetic acid with two subsequent reprecipitations will give a very good grade of casein. After the final precipitation the casein should be put through a series of sieves starting with a No. 20 and ending with a No. 80, using absolute alcohol to remove water from the product and finally ether. The product resulting from such manipulation will be a very finely divided powder much superior to the usual coarse, hard material.

The proteolytic action of pepsin on casein does not seem to offer any possibilities for an assay method. It was our intention to use a casein of high grade as a uniform source of protein and to allow pepsin to act upon it for a given length of time after which the digested protein in solution or else the remaining casein would be determined by a nitrogen determination. The difficulty with this method is the slight action of pepsin upon casein, even on casein that has been dissolved and freshly precipitated for the digestion. Casein of a uniform degree of purity can be prepared easily and it seems possible that its use may offer a new source of protein for pepsin digestion assays.

YEAR BOOK OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Volume 12 of the YEAR BOOK OF THE AMERICAN PHARMACEUTICAL ASSOCIATION has been mailed to members. General Secretary Day, by instruction, has sent a notice to all members, and a reply card, asking the member to state whether or not he desires to receive the next YEAR BOOK published, which will be during the year 1926. This request is made so that it may be determined whether the majority of the members make use of the YEAR BOOK and desire to receive it, as, if a considerable number of the members do not use it and do not care for it, the number printed can be cut down and result in a saving to the Association.

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Abraham, A. C., and Rae, J.
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J. Am. Chem. Soc., 47 (1925), 2002

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Chem. Rundschau f. Mit-Europa u. Balkan (March 22, 1925); through *Chem. & Drug.*, 102 (1925), 886

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J. Am. Chem. Soc., 47 (1925), 1974

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Detection of benzyl alcohol as dibenzyl oxalate
Perf. & Ess. Oil Rec., 16 (1925), 190

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Differentiation of aspirin and acetylsalicylic acid
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Value of the DM index for the evaluation of the arsenobenzenes
J. pharm. et chim., 1 (1925), 5.

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Examination of carbon tetrachloride
Pharm. Weekbl., 62 (1925), 626

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Estimation of lead in benzine
Ztschr. Unters. Nahr.- Genussm., 49 (1925), 173; through *Pharm. Weekbl.*, 62 (1925), 678

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Identification of alkyl derivatives of barbituric acid
Boll. chim. farm., 64 (1925), 257

CLINICAL AND DIAGNOSTIC METHODS.

Labat and Favreau
Detection of adrenaline in urine
Bull. soc. pharm. Bordeaux, 63 (1925), 102.

Sitsen, M. H. P.
Quantitative determination of acetone in the urine by a colorimetric method
Pharm. Weekbl., 62 (1925), 622

DEGREE OF ACCURACY OF HYPODERMIC TABLETS.*

(PROPOSED ANNOUNCEMENT.)

Within the last few years the Bureau of Chemistry, in the enforcement of the food and drugs act, has given particular attention to medicinal tablets, especially the more commonly used hypodermic tablets. The data thus collected show that most tablets on the market comply reasonably well with the compositions declared. A material number, however, were found to vary from the stated compositions by amounts in excess of what should be expected under properly controlled conditions of manufacture.

These preparations are of prime importance medicinally. They are manufactured from physiologically potent substances and constitute the chief dependence of the physician in emergencies. The physical characteristics of a hypodermic tablet usually furnish no information as to its quantitative composition. Physicians, druggists and patients must rely upon the label. Serious consequences may follow any misstatement.

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* Criticisms and suggestions are invited; address C. A. Browne, Chief Bureau of Chemistry, Washington, D. C.

The Bureau of Chemistry will regard as adulterated or misbranded, or both, those hypodermic tablets which fail to comply with declared compositions to an extent greater than occurs in such tablets manufactured under properly controlled processes. In ascertaining the degree of accuracy practicable careful consideration will be given to the conclusions of committees representing the drug manufacturing industry which have studied this question thoroughly and have presented a comprehensive report to the Bureau of Chemistry. These committees have suggested the maximum variations, either above or below the labeled or claimed amounts (including all tolerances), which in their opinion should be permitted in tablets manufactured under properly controlled processes. They are as follows:

	Per cent.
Atropine sulphate hypodermic tablets purporting to contain 1/4 grain or more	7.5
Atropine sulphate hypodermic tablets purporting to contain less than 1/4 grain	9.0
Cocaine hydrochloride hypodermic tablets	9.0
Codeine sulphate hypodermic tablets	9.0
Morphine sulphate hypodermic tablets	7.5
Strychnine sulphate hypodermic tablets purporting to contain 1/4 grain or more	7.5
Strychnine sulphate hypodermic tablets purporting to contain less than 1/4 grain	9.0
Strychnine nitrate hypodermic tablets purporting to contain 1/4 grain or more	7.5
Strychnine nitrate hypodermic tablets purporting to contain less than 1/4 grain	9.0

METHODS OF ANALYSIS RECOMMENDED BY COMMITTEES REPRESENTING THE INDUSTRY.

The committees representing the manufacturing industry recommend the following methods of analysis of the products mentioned above. The Bureau of Chemistry, for the analysis of official samples, employs methods based upon the same general principles as those given below, although some of the details of the procedures may vary somewhat. Studies of these methods show that they give results which agree satisfactorily with those used by the Bureau of Chemistry.

These methods have been referred to the referee on drugs of the Association of Official Agricultural Chemists for his consideration or further study by that association.

Hypodermic Tablets—Atropine Sulphate.

In case of tablets containing 1/20 grain of atropine sulphate or in excess of this amount, dissolve at least 20 tablets in sufficient distilled water to make 100 cubic centimeters and take an aliquot equal to at least one grain of atropine sulphate.

In case of tablets containing less than 1/20 grain of atropine sulphate, dissolve a sufficient number to represent at least one grain of atropine sulphate in sufficient distilled water to make a clear solution.

In either case make the aqueous solution distinctly alkaline with ammonia and shake out with several portions of chloroform until tests with Mayer's reagent indicate that the aqueous solution has been completely exhausted of the alkaloid. Evaporate the combined chloroform extracts to dryness on the water-bath. Dissolve the residue in a few cubic centimeters of neutral alcohol. Add 10 cubic centimeters of $N/20$ sulphuric acid and titrate excess of acid with $N/50$ potassium hydroxide solution, using methyl red indicator.

Each cubic centimeter of $N/20$ sulphuric acid consumed corresponds to 0.017362 gram of atropine sulphate $(C_{17}H_{23}O_3N)_2H_2SO_4 + H_2O$.

Hypodermic Tablets—Cocaine Hydrochloride.

Dissolve not less than 20 tablets in sufficient distilled water to make 100 cubic centimeters and take an aliquot equivalent to at least one grain of cocaine hydrochloride. Make the aqueous solution slightly alkaline with ammonia and shake out with several portions of ether until the

aqueous layer is shown to be completely exhausted of alkaloid, using Mayer's reagent for the test. Combine the ether extracts and evaporate the major portion of the ether on the steam-bath, finally allowing the remainder to be dissipated at room temperature. Dissolve the residue in a few cubic centimeters of neutral alcohol. Add 10 cubic centimeters of $N/20$ sulphuric acid, and titrate the excess of acid with $N/50$ potassium hydroxide, using methyl red indicator. Each cubic centimeter of $N/20$ sulphuric acid corresponds to 0.016983 gram of cocaine hydrochloride, $C_{17}H_{21}O_4NHCl$.

Hypodermic Tablets—Codeine Sulphate.

Dissolve not less than 20 tablets in sufficient distilled water to make 100 cubic centimeters and take an aliquot equivalent to at least one grain of codeine sulphate. Make the aqueous solution alkaline with ammonia and shake out with several portions of chloroform until the aqueous solution is shown to be exhausted of alkaloid, using Mayer's reagent for the test. Evaporate the combined chloroform extracts to dryness on the water-bath, and dissolve the residue in a few cubic centimeters of neutral alcohol. Add 10 cubic centimeters of $N/20$ sulphuric acid and titrate the excess of acid with $N/50$ potassium hydroxide solution, using methyl red indicator.

Each cubic centimeter of $N/20$ sulphuric acid consumed corresponds to 0.019663 gram of codeine sulphate $(C_{18}H_{21}O_3N)_2H_2SO_4 + 5H_2O$.

Hypodermic Tablets—Morphine Sulphate.

Dissolve not less than 20 tablets in sufficient distilled water to make 100 cubic centimeters and take an aliquot equivalent to at least one grain of morphine sulphate. Make the aqueous solution slightly alkaline with ammonia and shake out six times with a mixture consisting of three parts of chloroform and one part of alcohol.

Evaporate the combined extracts to dryness on the water-bath and dissolve the residue in a few cubic centimeters of neutral alcohol. Add 10 cubic centimeters of $N/20$ sulphuric acid and titrate the excess of acid with $N/50$ potassium hydroxide.

Each cubic centimeter of $N/20$ sulphuric acid corresponds to 0.018962 gram of morphine sulphate $(C_{17}H_{19}O_3N)_2H_2SO_4 + 5H_2O$.

Hypodermic Tablets—Strychnine Sulphate or Strychnine Nitrate.

In case of tablets containing $^1/_{20}$ grain of strychnine sulphate or strychnine nitrate or in excess of this amount, dissolve at least 20 tablets in sufficient distilled water to make 100 cubic centimeters and take an aliquot equal to at least one grain of strychnine sulphate or strychnine nitrate.

In case of tablets containing less than $^1/_{20}$ grain, dissolve a sufficient number to represent at least one grain of strychnine sulphate or strychnine nitrate in sufficient distilled water to make a clear solution.

In either case make the aqueous solution distinctly alkaline with ammonia and shake out with several portions of chloroform until tests with Mayer's reagent indicate that the aqueous solution has been completely exhausted of the alkaloid. Evaporate the combined chloroform extracts to dryness on the water-bath. Dissolve the residue in a few cubic centimeters of neutral alcohol. Add 10 cubic centimeters of $N/20$ sulphuric acid and titrate the excess of acid with $N/50$ potassium hydroxide solution, using methyl red indicator.

Each cubic centimeter of $N/20$ sulphuric acid consumed corresponds to 0.021414 gram of strychnine sulphate $(C_{21}H_{22}O_2N_2)_2H_2SO_4 + 5H_2O$, or 0.01986 gram of strychnine nitrate, $C_{21}H_{22}O_2N_2HNO_3$.

ANNUAL MEETING OF ALPHA ZETA OMEGA FRATERNITY.

The fifth annual convention and banquet of the Alpha Zeta Omega Fraternity was presided over by Dr. H. V. Arny of Columbia University College of Pharmacy, held in Newark. The next convention (1926) will be held in Philadelphia. The following officers were elected: *President*, S. I. Sless, Philadelphia; *Vice-President*, Samuel Block, Baltimore; *Treasurer*, Benjamin Margolis; *Secretary*, I. M. Ostrum.

A PHARMACEUTICAL STUDY OF ACETYLSALICYLIC ACID.

BY HARRIET V. SNIDOW AND H. A. LANGENHAN.

No. 2*—Incompatibility.

Two thousand prescriptions, collected from eighty drug stores throughout Seattle, were classified: One hundred and forty or seven per cent contained acetylsalicylic acid. Of the one hundred and forty, seventy-seven, or fifty-five per cent, designated acetylsalicylic acid; forty-nine, or thirty-five per cent, designated Aspirin and fourteen, or ten per cent, called for Empirin. The one hundred and forty prescriptions contained forty-eight different medicinal substances, and represented many different combinations. The following table offers a survey of the ingredients, the number of times each appeared, and the number of combinations containing each substance. Acetylsalicylic acid of course appears in each prescription.

Ingredients prescribed with acetylsalicylic acid.	No. of times prescribed.	Combinations.	Ingredients prescribed with acetylsalicylic acid.	No. of times prescribed.	Combinations.
1. Acetanilid	4		26. Extract of Cannabis	1	
2. Aloin	2		27. Extract of Cascara Sagrada	3	
3. Ammonol	2		28. Extract of Nux Vomica	1	
4. Antipyrine	2		29. Euquinine	2	
5. Asafœtida	1		30. Heroine Hydrobromide	1	
6. Atropine Sulphate	1		31. Hexamethylenamine	5	
7. Benzyl Succinate	1		32. Magnesium Oxide	1	
8. Bismuth Subnitrate	2		33. Morphine Sulphate	4	3
9. Caffeine	2		34. Oxyl Iodide	2	
10. Caffeine Citrate	58	24	35. Phenacetin	53	20
11. Calcidin	3		36. Pilocarpine Hydrochloride	1	
12. Calomel	4	3	37. Potassium Citrate	1	
13. Camphor	7	5	38. Powder of Ipecac and Opium	6	
14. Camphor Monobromated	12	7	39. Quinine Sulphate	10	9
15. Carbo Ligni	1		40. Saccharum Lactis	5	
16. Caripeptic and Charcoal	1		41. Salol	16	14
17. Carmine	1		42. Sodium Bicarbonate	11	7
18. Cascara (powd.)	1		43. Sodium Bromide	1	
19. Cincophen	1		44. Sodium Citrate	1	
20. Cocoa	1		45. Sodium Salicylate	1	
21. Codeine	5		46. Strychnine Sulphate	1	
22. Codeine Phosphate	1		47. Tincture of Belladonna	1	
23. Codeine Sulphate	45	20	48. Veronal	4	1
24. Extract Aconite	2				
25. Extract of Belladonna	5	3			

It is worth while calling attention to the fact that caffeine citrate appears 58 times. Inasmuch as acids are considered incompatible (see survey under acids) this combination may be questioned. Phenacetin appears 53 times and as far as has been ascertained is compatible with acetylsalicylic acid. Codeine appears 45 times, and whereas no reports have appeared, relative to this substance being incompatible, tablets of acetylsalicylic acid five grains to codeine sulphate one-fourth grain, containing a small amount of starch and talcum that had been prepared in the laboratory, showed signs of decomposition after several weeks. A

* For No. 1, "Historical," see JOURNAL A. PH. A., v. 14, p. 125 (1925).

strong odor of acetic acid or more like the anhydride was given off and a coating of needle-like crystals appeared on the tablet.

Among the prescriptions analyzed a few combinations appeared repeatedly and are herewith appended:

Aspirin		Acetylsalicylic Acid	
Phenacetin	5 prescrip's	Sodium Bicarbonate	5 prescrip's
Acetylsalicylic Acid		Acetylsalicylic Acid	
Phenacetin		Codeine Sulphate	6 prescrip's
Codeine Sulphate	3 prescrip's	Acetylsalicylic Acid	
Acetylsalicylic Acid		Caffeine Citrate	4 prescrip's
Phenacetin		Acetylsalicylic Acid	
Codeine Sulphate		Veronal	
Caffeine Citrate	11 prescrip's	Codeine Sulphate	4 prescrip's
Acetylsalicylic Acid		Acetylsalicylic Acid	
Phenacetin		Caffeine Citrate	
Caffeine Citrate	15 prescrip's	Camphor Monobromate	5 prescrip's

The doses of the single ingredients varied in practically every prescription.

Before attempting a laboratory investigation of the possible incompatible combinations, a survey of all work already done was deemed feasible. Information was obtained from textbooks and journal literature, properly arranged and summarized. The summary is herewith appended:

According to Haynes,[1] acetylsalicylic acid is largely used as a substitute for the salicylates—the pure acid having no action on the stomach, decomposition into salicylates and acetates taking place in the intestines. It is said that the desirability of acetylsalicylic acid lies in the ester combination as compared with salicylic acid or salicylates. Hence the presence of free acid, or decomposed ester, is objectionable. That acetylsalicylic acid is easily decomposed by other substances, thus eliminating some of the desired properties, is quite apparent from the study of the various combinations in which it is dispensed.

WATER.

Water appears to be one of the principal substances that bring about decomposition. Even small quantities in apparently dry mixtures cause hydrolysis. Vanderkleed and Êwe[2] as well as Haynes believe that the presence of small amounts of free salicylic acid in compressed tablets may be due to contact with water during the process of manufacture, Vanderkleed and Êwe even stating that acetylsalicylic acid cannot be put through the processes necessary in making compressed tablets without slight decomposition. Ahrens[3] during the course of his work, centering about the melting point of acetylsalicylic acid, determined that it absorbs 1.7629 per cent of its weight from surrounding moisture. A report by Tsakalotos and Horsch[4] furnishes the information that at room temperature acetylsalicylic acid in the proportion of one part to five parts of pure water is almost completely decomposed in 100 days, the reaction being very complicated. The presence of hydrochloric or sulphuric acid increases the rate of hydrolysis, the hydrochloric producing the greater acceleration. Citric and acetic acids were found to increase the rate of decomposition for the first seven days and after that time to decrease it due to reverse reaction.

CITRATES.

Leech,[5] in his investigations on the hydrolysis of acetylsalicylic acid, employed sodium citrate. He used 18 grams of acetylsalicylic acid and 72 grams of citrate in 240 cc. of water. At the end of four days the acid was broken down to the extent of 50 per cent; after nine days to 75 per cent; and almost completely hydrolyzed at the end of seventeen days. This would tend to disprove the claim that acetylsalicylic acid may be dispensed in sodium citrate solution without decomposition. Heavy metals, present due to manufacturing conditions, act as catalytic agents in aiding decomposition, according to Merrill.[6] Acetylsalicylic acid apparently goes into solution when mixed with aqueous alkali acetate or citrate solutions. This according to Tattam[7] is due to a double decomposition, the acetylsalicylic acid combining with the alkali liberating the equivalent amount of acetic and citric acids. He further adds that, from a therapeutical standpoint, the incompatibility is probably not serious.

COLOR REACTION.

The conventional procedure for determining the presence of free salicylic acid or a salicylate in acetylsalicylic acid mixtures is to apply the ferric alum test. The indication is a purplish color. The absence of this color was interpreted as "no free acid or salicylate" until it was recalled that some substances "masked" the test. This interference as applied to acetylsalicylic acid has been investigated to some extent. Gehe and Co.[8] find that borax, sodium phosphate, tartaric acid, citric acid, and other oxyacids render the test as given by the German Pharmacopœia unsatisfactory. Smith[9] reports that strong organic acids, tartaric and more particularly citric, are used to mask the color reaction between ferric chloride and salicylic acid, one per cent of citric acid being sufficient to mask about 0.2 per cent of free salicylic acid. Therefore, he concludes that all tablets which after being powdered give no violet coloration with ferric chloride should be viewed with suspicion. The salicylic and acetylsalicylic acids may be removed from the tablet by extraction with a mixture of ether and petroleum ether, in which the tartaric and citric acids are insoluble. The statement is made by Ruddiman[10] that the violet color may not show at first because citrates and citric acid interfere, but after standing for a time the color will develop. A report[11] read at the 1924 meeting of the Scientific Section of the American Drug Manufacturers' Association states that no incompatibility exists between acetylsalicylic acid and cinnamic acid, and that there is no indication of any with oxalic acid. Oxalic acid was found to interfere with the sensitiveness of the ferric alum test. A ratio of five grains of acetylsalicylic acid to one-tenth grain of oxalic acid did not seem to give this interference. The following represent a few references to acetylsalicylic acid prescriptions, mostly in an acid vehicle, and comments on these combinations:

Prac. Drug., v. 32, p. 165 (1914).
Pac. Drug. Rev., v. 28, April, p. 12 (1916).
Ibid, v. 29, Oct., p. 22 (1917).
"Incompatibilities in Prescriptions, Ruddiman," Ed. 4, p. 163 (1917).
Pac. Drug Rev., v. 30, May and June, p. 28 (1918).
Prac. Drug., v. 37, p. 38 (1919).
Drug. Circ., v. 68, p. 150 (1924).

SODIUM BICARBONATE.

Acetylsalicylic acid is said to be incompatible with alkalies and their carbonates producing acetates and salicylates.[12] In 1903 Rosseau[13] reported that a mixture consisting of acetylsalicylic acid, sodium bicarbonate and exalgin within a few days became converted into a semifluid black mass, liberating acetic acid. The cause was traced to the action of the bicarbonate on the acetylsalicylic ester, the statement being made that the acetyl radical of the acetylsalicylic acid is easily removed by alkalies. In a reply to a query[14] as to the reaction taking place when acetylsalicylic acid and sodium bicarbonate are mixed in solution the following appears: "The aspirin is decomposed by sodium bicarbonate with the production of acetic acid and salicylic acid or sodium salicylate and the evolution of carbonic acid gas." According to Gerngrosz and Kersasp,[15] if 60 grams of acetylsalicylic acid are mixed with 27 grams of sodium bicarbonate and 120 cc. of water, and the filtrate evaporated, sodium acetylsalicylate will be formed. This salt is said by Bouvet[16] to be very hygroscopic and to hydrolyze rapidly in contact with water into sodium salicylate and acetic acid. In answer to a query[17] as to whether in a given prescription acetylsalicylic acid should be suspended or dissolved by the addition of sodium bicarbonate, this reply was given: "Since aspirin is prescribed on the assumption that it passed through the acid stomach secretions intact, and is not decomposed until it reaches the alkaline intestinal secretion, it would be incorrect to prescribe an alkali with acetylsalicylic acid, and still more so to make such an addition to merely produce a clear mixture. The aspirin should be finely powdered and suspended in the vehicle." A comment[18] on a simple mixture of acetylsalicylic acid and sodium bicarbonate, to be capsulated, states that if the powders are dry they should keep well the required time (about four days) and expresses a preference for granular sodium bicarbonate. Another prescription,[19] similar but containing in addition extract of cascara sagrada, brings the comment that decomposition will be in proportion to the amount of moisture present. A little moisture will decompose a small amount of acetylsalicylic acid into acetic and salicylic acids, these acids will start a reaction with the bicarbonate which will liberate more moisture and the reaction will thus proceed, forming a pasty residue,[20] the decomposition products being, not poisonous, but troublesome. According to U. S. Patent No. 1,404,673, Jan. 24,[21] "aspirin is dissolved in a saturated solution of sodium bicarbonate containing aromatic elixir and glycerol."

MAGNESIUM OXIDE, HYDROXIDE AND CARBONATE.

The patented process of Gerngrosz and Kast[22] for preparing magnesium acetylsalicylate consists in adding to an aqueous suspension of acetylsalicylic acid the oxide, hydroxide or carbonate of magnesium in calculated proportions, stirring or shaking the reacting mixture, cooling if necessary, and evaporating the aqueous solution of the salt *in vacuo*. This salt is water-soluble.[23] An unsigned article[24] states that acetylsalicylic acid and salol should not be combined with magnesium oxide in prescriptions, since in the presence of moisture magnesium acetylsalicylate would be formed and this, if moisture enough were present, would decompose yielding magnesium salicylate. The salol is also said to be decomposed. A. Wohlk[25] recommends a tablet mixture consisting of 18 grams of acetylsalicylic acid and 2.5 grams of light magnesia. The combination is supposed to eliminate any

undesirable secondary effects of the acetylsalicylic acid without altering its specific action and is said to be very popular in Denmark. Salicon,[26] claimed to be "an improved aspirin," was found to contain approximately 3.2 grains of acetylsalicylic acid, 2.2 grains of magnesium carbonate and some starch.

AMMONIUM CARBONATE.

Information was sought concerning prescriptions containing acetylsalicylic acid and ammonium carbonate, or aromatic spirits of ammonia, the vehicle in each case being liquid. One[27] reply tells us that the acetic and salicylic acids formed by the decomposition of acetylsalicylic acid attack the ammonium carbonate, forming to some extent the corresponding salts of ammonium and giving off carbon dioxide gas. Another reply[28] states, "As aspirin is an acid and aromatic spirit of ammonia contains a carbonate the gas produced is carbon dioxide." The third combination contained syrup of orange. The "querist" was told to prepare a shake mixture by triturating the acetylsalicylic acid in a mortar with the aromatic spirit of ammonia and syrup of orange and then to make up to volume by adding water slowly with trituration.[29] Tragacanth was suggested as a suspending agent.

HEXAMETHYLENAMINE.

In 1909 and 1910 queries concerning prescriptions containing acetylsalicylic acid and hexamethylenamine brought the information that in powder mixtures[30] the dampness is probably due to a reaction between the acetylsalicylic acid and hexamethylenamine. In solution[31] there is mutual decomposition yielding, in the case of acetylsalicylic acid, salicylic and acetic acids. An article [32] of a later date gives the decomposition products of the hexamethylenamine as being ammonia and formaldehyde. Robinson[33] states that he has seen capsules containing acetylsalicylic acid and hexamethylenamine dispensed hundreds of times without any trouble. An article by Linton[34] gives the information that powders of the two which were dispensed were afterwards returned in a decidedly moist condition; that this dampness occurred in a mixture of the two powders regardless of whether they were mixed with titration or by simply turning them over with a spatula, whether they were put up in capsules, plain powder papers or waxed powder papers. Diluents and drying agents with the exception of a large amount of althæa did not prevent the formation of a sticky mass. According to Ruddiman,[35] hexamethylenamine and acetylsalicylic acid when triturated together give a slightly damp powder, which becomes sticky on standing a short time and finally is almost liquid. A greenish yellow color is acquired by the mass and an odor of formaldehyde is noticeable. Hexapyrin[36] is said to be hexamethylentetramine acetylsalicylate.

QUININE AND SALTS OF QUININE.

One of the common combinations reported as being incompatible is that of quinine sulphate and acetylsalicylic acid. A mixture of these two, according to the literature, first becomes sticky, then cakes and contracts. The color change consists of a gradual darkening from a faint yellow to a brown-red. A strong odor of acetic acid is obtained. Scoville[37] was possibly the first to report on this combination. He assumed that the water of crystallization of the quinine sulphate hydrolyzed the acetylsalicylic acid; that the resulting acids acted slowly upon the qui-

nine forming some liquid quinotoxin; that this in turn formed a eutectic mixture with salicylic acid. Heat would hasten the liquefaction. This explanation was apparently accepted as is evidenced by its appearance in textbook[38] and journal[39] literature of a later date. Robinson[40] makes the following statement: "For some time the pharmaceutical journals carried the information that quinine was incompatible with aspirin, because a very dangerous, poisonous compound, quinotoxin, was formed, from which many deaths resulted. I put no credence in those reports at that time, and I do not now. As far as I know, the two chemicals are perfectly compatible. I have prescribed them and have seen them prescribed without any bad results." Sollmann[41] in an article entitled "The Quinotoxin Myth" agrees with Robinson as far as the absence of the formation of poisonous compounds in this mixture is concerned. He suggests that the incompatibility lies in the decomposition of the acetylsalicylic acid and subsequent liberation of salicylic acid which is objectionable. Ganassini[42] reported that quinine and acetylsalicylic acid ("as found from experiments *in vitro* and on rabbits") may be associated since the formation of quinotoxin was not discovered. Quinotoxin is formed, he reports, only with impure acetylsalicylic acid, by the action of acetyl chloride. In 1924 Ruddiman and Lawnwermeyer[43] conducted a series of experiments, the results of which were summarized as follows:

"1. Mixtures of aspirin with quinine sulphate or quinine bisulphate do not change much in appearance in six months.

2. A mixture of aspirin with quinine alkaloid will change much more quickly than with the sulphate.

3. Aspirin seems to increase the toxicity of quinine a little.

4. The old mixture of quinine and aspirin which has changed to a brown-red mass is no more toxic than the fresh mixture."

Frogs were used in determining the toxicity of the quinine-aspirin mixtures above. Further experimentation, using warm-blooded animals, was believed necessary.

In 1859, Miller and Rhode[44] obtained products from quinine and cinchonine which they called quinotoxin and cinchotoxin. As the names indicate they believed the products to be toxic. Sollmann's[41] article bears the following conclusion: "There is no occasion to fear toxic effects from the transformation of quinin into 'quinotoxin' (more properly, quinicin). This substance is not especially toxic and it could not be formed in significant quantities, if at all, in the body. It may be formed in prescriptions containing quinine and organic acids, but this would proceed slowly, and the quinicin would undergo further transformation into inactive products. Such solutions are perfectly proper if used within a few days. They should not be used after prolonged standing, when they have become discolored and precipitated; not because they have become toxic, but because they are inactive." B. F. Howard and O. Chick[45] in discussing the sterilization of acid quinine solutions state that it is not clear from the evidence available whether quinicine and cinchonicine are poisonous or not but that large quantities of cinchona febrifuge, containing high percentages of these bodies, are administered in India without, apparently, any evil results. In an unsigned article[46] it is reported that slightly dissociated acids such as acetylsalicylic, citric, malic, acetic, or tartaric, act as catalytic agents in the formation of quinotoxin from

quinine, this conversion being practically quantitative at from 98 to 102° C.

The fact that acetylsalicylic acid and quinine or a salt of quinine are dispensed in combination is brought forth by a study of the literature on the so-called "New Remedies." Based upon the information available the following proprietary products contain acetylsalicylic acid and quinine or a quinine salt.

1. Apochin.—*Pharm. Era*, v. 59, p. 143 (1924).
2. Captol.—*Jour. de pharmacie et chimie;* through Y. B. (1916).
3. Denesin tablets.—*Pharm. Ztg.;* through YEAR BOOK (1920).
4. Togal.—*Apoth. Ztg.*, v. 31, p. 290 (1916); through *Chemical Abstracts* (1917).
5. In addition to these a report on quinine acetosalicylsulphate offers material for a new line of thought. Dott[47] finds that, when acetylsalicylic acid (4 mols) is allowed to react with quinine sulphate (1 mol), there is formed a definite compound melting at 96° C. One part dissolves in 50 parts of water which is a greater solubility than that exhibited by either of its components. The salt is capable of combining with 9 mols of water, but Dott suggests that 4 mols of water be taken as the standard because the product readily loses water down to this point. The chemical formula is given as

$$B.2H_2SO_4.4C_9H_8O_4.4H_2O \qquad B = C_{20}H_{24}N_2O_2$$

A mixture of euquinine and acetylsalicylic acid, after standing a few days, was found to have formed a slightly damp, shrunken mass.[48]

ANTIPYRINE.

An unsigned article[49] bears the information that in such a mixture "the acetic ester" will be split off and "keep the powder moist." Ruddiman[50] reports that a sticky mass is formed, having a yellowish color. The mass becomes darker and forms a hard crystalline solid which gives a deep violet with ferric chloride. The statement relative to the formation of a mass is in direct contradiction to the statement in Incompatibilities.[51] Acetopyrine[52] is reported as being a new specialty composed of antipyrine and acetylsalicylic acid.

POTASSIUM IODIDE.

Duncan[53] reports that at first HI is formed which ultimately liberates free iodine under the influence of light and air. Ruddiman[54] finds that cachets containing such a mixture may become blue, the explanation of the presence of free iodine being the same as given above. He also states that the change occurs more quickly in a moist atmosphere. Robinson[55] believes such a decomposition to be purely theoretical. Aspriodine[56] is reported as being a combination consisting of iodine 41.47 per cent and acetylsalicylic acid 58.53 per cent.

MISCELLANEOUS.

Other substances reported[57] as being incompatible with acetylsalicylic acid are borax, phenol, lead acetate, and sodium phosphate.

PRELIMINARY LABORATORY EXPERIMENTATION.

In order to place the results on a comparable basis, the mixtures used were made up of the average U. S. P. doses of the medicinal agent with five grains of acetylsalicylic acid. The ratio of these ingredients in the prescriptions analyzed

varied much and a study of each ratio was impossible in the limited time available. The ingredients* were mixed and placed in clear glass vials, stoppered with corks. As prescribed the mixtures were dispensed in capsules or papers, hence again a slight difference as compared with the original prescription occurs.

The observations made are herewith recorded. No attempt is made to interpret these, but the continuation of this work will undoubtedly prove of value towards attempting an explanation.

Hexamethylenamine
Acetylsalicylic Acid

Jan. 26. Damp powder, packed when triturated.

Feb. 10. Acetic acid odor evolved; semi-solid mass in vial.

Feb. 23. Yellow tint noticeable; odor of formaldehyde strong.

Quinine Sulphate
Acetylsalicylic Acid

Jan. 26. Powder damp enough to pack slightly.

Feb. 10. No change.

May 26. Acetic acid odor evolved.

Salol
Acetylsalicylic Acid
Euquinine

Jan. 26. Sticky damp mass formed.

Feb. 10. Strong acetic acid odor evolved.

May 26. The powder in that portion of the vial toward the light had assumed a yellowish tint which deepened to reddish brown. The powder protected from the direct rays of light was not changed in color.

Quinine Sulphate
Salol
Citrated Caffeine
Acetylsalicylic Acid

Jan. 26. Powder packed but very slightly.

May 26. Decided acetic acid odor.

June 1. The powder exposed to the light had assumed a faint yellow tint.

Phenacetin
Euquinine
Acetylsalicylic Acid

Jan. 26. Damp powder; packed when triturated.

Jan. 31. Powder solidified forming a cylindrical cake which could be removed as such; odor of acetic acid evolved, mass yellow in color.

Phenacetin
Powdered Extract of Nux Vomica
Caffeine
Acetylsalicylic Acid

Jan. 26. Powder packed when triturated.

Feb. 10. Acetic acid odor evolved.

Sodium Bicarbonate
Acetylsalicylic Acid

Jan. 26. The powder formed was but slightly damp.

Exalgine
Sodium Bicarbonate
Acetylsalicylic Acid

Jan. 26. Powder packed readily.

Jan. 31. Odor of acetic acid evolved.

Feb. 10. Powder very soft and damp.

Antipyrine
Acetylsalicylic Acid

Jan. 26. Powder packed tightly upon trituration.

Jan. 31. Strong odor of acetic acid evolved.

Magnesium Oxide
Salol
Acetylsalicylic Acid

Jan. 27. Powders showed no dampness.

Feb. 10. Powders packed in vial.

Magnesium Oxide
Acetylsalicylic Acid

Jan. 26. No dampness.

Feb. 10. Slightly damp and with pressure packed in the vial.

Sodium Citrate
Acetylsalicylic Acid

Jan. 26. No dampness.

Jan. 31. Powders packed in the vial.

May 26. Very strong odor of acetic acid evolved.

Potassium Acetate
Acetylsalicylic Acid

Jan. 26. Powders packed upon trituration.

Jan. 31. Faint odor of acetic acid.

Sodium Phosphate
Acetylsalicylic Acid

Jan. 26. Powders became damp and packed upon trituration.

Jan. 31. Faint odor of acetic acid.

Feb. 10. Mass solidified in a cylindrical mass which could be removed from the vial as such.

March 16. Partial liquefaction had occurred.

May 26. Strong acetic acid odor.

* The ingredients are printed in bold face.

Borax

Acetylsalicylic Acid

Jan. 29. No packing upon trituration.

Jan. 31. Powders packed and faint acetic acid odor evolved.

May 26. Strong acetic acid odor.

Lead Acetate

Acetylsalicylic Acid

Jan. 29. Immediate odor of acetic acid; no dampness.

Jan. 31. Dampness had developed and the powders packed; strong odor of acetic acid.

Phenol

Acetylsalicylic Acid

Jan. 26. Powders became quite damp and packed tightly.

Acetanilide

Acetylsalicylic Acid

Jan. 26. Powders slightly damp and packed on trituration.

The addition of ferric alum test solution to an aqueous mixture of each of these combinations gave the characteristic salicylate color test which is not given with undecomposed acetylsalicylic acid. As stated before, the presence of citrate or acetate masked this test, hence it did not respond in the combinations containing those radicals. Furthermore it was noted that solutions or mixtures neutral to litmus did not respond but upon acidulation the violet color appeared. All combinations are being kept under observation and an attempt to determine both a qualitative and quantitative decomposition will be made. It will be noted that these preliminary experiments, in most instances, agree with the results already reported. Repeated attempts have been made to separate the products of decomposition, but so far the results are unsatisfactory, mainly because duplicate results are difficult to obtain. The mixtures are being kept at room temperature under ordinary conditions with the hope that after three months have lapsed (*i. e.*, the summer intermission) decomposition will have reached a stage wherein isolation of these products will become feasible.

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A NEW EMULSIFYING AGENT FOR VOLATILE OILS.*

BY CHARLES H. LAWALL.

Several years ago while working with a commercial volatile oil emulsion, the ingredients of which were identified as having been used for producing a permanent degree of emulsification were so unusual in their character, that after the particular piece of research was completed, some experiments were performed with the substances in question. These experiments led to a recognition of the fact that a mixture of 20% of powdered egg albumin and 80% of powdered cream of tartar is an emulsifying agent with a selective power of sub-dividing or emulsifying volatile oils rather than fixed oils.

One of the particular points of interest in connection with this rather empiric combination is the fact that it can be used in very much smaller quantities than emulsifying agents usually are capable of serving. This can be best illustrated by giving a typical formula for such an emulsion with working directions.

To emulsify volatile oils heavier than water, such as oil of sassafras, wintergreen or clove, place 100 cubic centimeters of the oil in a bottle of a capacity of 200 cubic centimeters. Add one gram of the emulsifying mixture, consisting, as stated, of 20% egg albumin and 80% cream of tartar and agitate well. Then add

* Section on Practical Pharmacy and Dispensing, A. Ph. A., Buffalo meeting, 1924.

100 cubic centimeters of water and agitate violently for about one minute. The oil immediately becomes sub-divided without, however, increasing the mixture greatly in viscosity. Standing for any length of time does not appear to influence the oil in the matter of coalescing into globules or drops. The mixture has a tendency to separate into a lighter aqueous layer and a heavier layer of microscopic globules of oil, but even after more than a year's standing in a number of specimens which I have made, there has been no tendency in the oil to run together into larger globules.

For volatile oils that are lighter than water, the amount of emulsifying powder that is to be taken is about two and a half times that required for the heavy oils. In these cases the emulsification is equally permanent, and very satisfactory for purposes of making the so-called concentrates which are employed for adding to syrups in the preparing of flavors for the carbonated beverage industry. Experiments with the emulsifying powder with immiscible liquids like chloroform, ether, benzene, kerosene gave rather unsatisfactory results. With fixed oils the results are not as good as ordinary emulsification materials.

The facts are simply published for the benefit they may have for those who are studying the subject of emulsification and a practical aid in making volatile oil concentrates, miscible with syrup to be used for flavoring purposes.

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NOTES ON SILICA GEL AS A FILTERING AGENT.*

BY E. V. HOWELL.

Silica gel is chemically a hydrated form of pure silica and is accordingly extremely resistant to most reagents.

Physically it is a hard, semi-transparent, glassy substance. Its hardness, according to the mineral scale, is about 5 and it undergoes but little abrasion with ordinary handling.

The word "Gel" does not, however, accurately suggest the physical nature of the material as used, but rather refers to its condition at one stage of manufacture. It is a hard, glassy material, with the appearance of a clear quartz sand and having the chemical formula of SiO_2. The thing that differentiates this unique material, silica gel, from ordinary sand is its highly porous structure, and especially the size and uniform arrangement of the pores.

Silica gel is made by mixing, in proper proportions and in a pre-determined manner, solutions of sodium silicate and sulphuric acid. After several hours this mixture sets to a homogeneous, jelly-like mass, which is called hydrogel. This hydrogel is then broken into pieces about one inch in size and thoroughly washed to free it of sodium sulphate and excess acid. It is subsequently dried in a carefully regulated manner until it has shrunk to a constant volume (about 10% of its original volume). It is then known as "Silica Gel" and is ready for the final activation necessary before it can be used in any of its many applications. This activation is

* Section on Practical Pharmacy and Dispensing, A. PH. A., Buffalo meeting, 1924.

accomplished by heating the silica gel to a moderate temperature in a stream of air for a few hours.

Silica gel, as has been mentioned, is a very porous substance. It is claimed that the pores, which are ultramicroscopic in size, form approximately 41% of its total volume. As there is not a microscope of sufficient magnifying power to make it visible to the eye, the internal structure of silica gel is very difficult to describe. This has been determined, however, by the observation of its behavior. It seems to consist of a uniformly arranged aggregation of extremely small spherical particles of pure SiO_2, such spherical particles touching one another and thereby forming voids between them, which have been referred to as pores of ultramicroscopic size. The surface of these particles in a given weight of silica gel is of extremely great dimensions. For instance, it has been mathematically worked out that one gram of silica gel exposes an internal surface of approximately five thousand square feet.

The writer at the time this title was sent in had failed to see an article on this subject by J. C. Krantz, Jr., JOUR. A. PH. A., Vol. XI, No. 9, p. 701. For this reason merely notes will be given.

In experiments with aqueous solutions we used only one-third as much silica gel as purified talc and found it more satisfactory, except as to cost. For alcoholic preparations we found it unsatisfactory. This does not agree with previous reports, and we have no way of establishing the fact that our samples and those used by others were the same.

In addition to effervescence and a crackling noise, on adding silica gel to alcohol, we had a rise in temperature. Twenty grams of granulated silica gel added to 60 mils of denatured alcohol, garage type, raised the temperature from 27.5° to 38° C; the powdered variety, in the same proportions, from 27.5° to 39°C. On ethyl alcohol 20 grams of the silica gel, either powdered or granulated, raised the temperature from 29° to 39° C.

The thought occurred that perhaps silica gel might remove water from alcohol. However, an alcohol, specific gravity 0.805 at 25° C., was filtered through silica gel. It was not clear on the third filtering and the sp. gr. instead of being lowered was increased to 0.810. Just what action takes place I have not had time to investigate but thought it worthy of attention. Another point in this connection is that when substances that liquefy on trituration, as thymol and menthol, are dissolved in paraffin oils, as in the sprays of the "National Formulary" and the "British Pharmaceutical Codex," a cloudiness is produced. With the present directions of the N. F. one would naturally rub them together in a mortar before dissolving. The cloudy solution will become clear at once on filtering through silica gel. If the N. F. directed that thymol be dissolved in a portion or all of the paraffin oil and then the camphor, this cloudiness would be obviated. No work has been done as yet to see if there is any change in the menthol and camphor in the finished preparation, when triturated together and dissolved or when dissolved separately. In appearance and odor there was no appreciable difference.

The work of the experiments has given the following results:

1. Silica gel can be used in place of purified talc in aqueous preparations.
2. Silica gel requires only about one-third as much as purified talc in aqueous preparations.

3. Silica gel lessens the time in making preparations, as it helps filtration to become more rapid.

4. Silica gel will not take the place of purified talc in the presence of alcohol.

5. Alcohol on silica gel produces an effervescence and a rise in temperature. This should be investigated.

THE TRAINING OF THE PRACTICAL PHARMACIST.*

BY WILLIAM J. HUSA.[1]

The aim of the College of Pharmacy of the University of Florida is to turn out *practical* pharmacists. This does not imply that we do not wish our graduates to know pharmaceutical theories, but rather that we want them to have such a thorough and sound knowledge of theories that they can correctly apply them and put them to practical use in producing superior pharmaceutical service.

Our three-year course is primarily a course in pharmacy, pharmacognosy, and pharmacology. A course in botany is given to serve as a foundation for the study of pharmacognosy. Anatomy and physiology are included to prepare the student for his work in pharmacology, bacteriology, and biological standardization of drugs.

The courses in general chemistry, qualitative and quantitative analysis and organic chemistry lead up to the work in toxicology, physiological chemistry, clinical testing and drug analysis.

We give a brief course in hygiene, and some work in physical training and military drill, so that our students may grow toward that worthy ideal of "a sound mind in a sound body."

I will now point out in somewhat more detail what we do in pharmacy proper, which is my own particular field. During the first half of the first year we cover the field of pharmaceutical arithmetic, including thorough study and drill on the various systems of weights and measures. The state boards of pharmacy recently have given this important subject greater recognition, by including in their examinations a separate paper on pharmaceutical and chemical mathematics.

During the second semester of the first year we take up the history of pharmacy and pharmaceutical literature and a study is made of the apparatus and processes used in pharmacy. Considerable attention is devoted to the fundamentals of pharmaceutical Latin and the student makes a good start toward the acquisition of a Latin vocabulary suited to the needs of the pharmacist. In this and succeeding courses, each student prepares several hundred U. S. P., N. F., and special preparations. In this work the student is taught that cleanliness and accuracy are absolutely essential and each student must keep his utensils, desk, and balances spotlessly clean. The students are told that a good pharmacist leaves no tracks.

Time will not permit a detailed discussion of each course, so suffice it to say that the work on theoretical and practical pharmacy continues into the second and third years. Some work is also given in commercial pharmacy, and thorough courses in prescriptions and dispensing, and in drug analysis.

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* Presented at the 22nd Annual Convention of the Florida Pharmaceutical Association, Lakeland, Fla., June 19, 1925.

[1] Professor of Pharmacy, University of Florida.

The "Pharmaceutical Syllabus" of 1922 outlines a course in commercial pharmacy which in seventy-five clock hours is supposed to cover bookkeeping, business correspondence, commercial and business law, and business practice. Of course, one cannot give a sound business training in seventy-five hours. The new School of Business of the University of Florida and similar schools give four-year courses in business training and even then they do not claim to turn out finished business men. On the other hand, thousands and thousands of men who have never read a book on economics or business have made very fine successes in business.

One frequently hears the statement that a pharmacist's time is taken up chiefly with business problems and that, therefore, the pharmacy colleges should devote a great deal more attention to business courses. If the time devoted to commercial subjects is increased, the course as a whole would have to be increased, say, from three to four years, or the time allotted to scientific and professional subjects would have to be decreased. Graduation from a college of pharmacy is required by law of all prospective pharmacists in a large and constantly increasing number of states. Now what is the intention of such a law? Is it to give pharmacists a training in business or a training in *pharmacy?* The Committee on the Pharmaceutical Syllabus might well ponder this.

I doubt if any one would seriously claim that a hardware merchant should be required by law to attend a school of business. No state board examines prospective dry goods men to see if they are competent in commercial subjects. Yet some of our state boards of pharmacy give questions on commercial pharmacy, defined as bookkeeping, business correspondence, commercial and business law, and business practice.

To protect public health it may be desirable and necessary that every pharmacist be a graduate of a pharmacy college and that he be examined by a board of examiners to see that he is properly qualified, but can we or should we have laws requiring business training and that a man be examined on business subjects? In my opinion such a procedure is undesirable and probably unconstitutional.

It is a fine thing for a pharmacist to have a business training; however, in my opinion, such a course should be limited to business principles, and provision made for other commercial courses which the student may elect if he so desires. Some students would not be interested in such courses, some would register for them during the summer session, while others might study an extra year beyond the time required by law.

In regard to the age-old question of whether pharmacy is a profession or a business, I agree with Dean Charles H. LaWall that "pharmacy is a profession for every man who will make it one." And, lest we forget, it is the professional side of pharmacy that brings to the pharmacist special privileges and special obligations.

HOSPITAL PHARMACISTS' ASSOCIATION OF SOUTHERN CALIFORNIA.

The hospital pharmacists of Southern California have perfected an organization known as the Hospital Pharmacists' Association of Southern California. Twelve hospitals are represented. The officers are: *President,* P. Windsor Howard, Los Angeles; *Vice-President,* H. F. Fuller, Glendale; *Secretary-Treasurer,* Miss B. L. Blackiston, Los Angeles.

A REVIEW OF THE PRINCIPAL EVENTS IN AMERICAN MEDICINE.

BY JOHN URI LLOYD.

(*Concluded from July Issue, p. 631.*)

PART IV.

RECAPITULATION.

From this cursory study, one may comprehend the manifold influences and discordant factors involved in so simple a problem as health preservation and disease treatment. Let us summarize:

1st. A sick person is naturally desirous of recovering.

2nd. Inbred hope, even confidence, prevails that some agent is capable of "curing" the ailment.

3rd. Belief that certain persons, either by inheritance, education or accidental discovery, possess this information.

4th. Involved function of mystery, necromancy, astrology and superstition, heired from the past, is to humanity ever present.

5th. The frequent failure of legalized physicians to "cure" their patients, leads to more or less questioning of the fraternity.

6th. The terrible processes of "licensed physicians," even in times not afar from the present, led to antagonisms and the hope of escape from their "barbarisms."

7th. The perplexing discord, even antagonism, among physicians whose "ethics" in which the sick are not concerned, too often openly dominated their practice, to the patient's disgust.

8th. The exaggerated assertions made by persons concerned in secret (usually misnamed "patent") cures become thus readily tolerated.

9th. Advertisements of both fanatics and artful schemers, who, bespeaking the value of certain mysterious "discoveries," continuously attacked both legalized practitioners and educated pharmacists, were made possible by such methods.

10th. Laws designed to restrict therapeutic liberty or that demanded the use of certain processes and legalized remedies, in which many educated physicians did not believe, and which were likewise distasteful to numbers of laymen, were too often causes of discord.

The people (perhaps not universally) feared that the *Profession of Medicine* was simply a *legalized trade* and that its votaries aimed at self-protection or aggrandizement in what was really a laudable effort of the rank and file to suppress harmful processes, instituted by ignorant pretenders. It was even openly asserted that, under the name "physician" the medical profession should be given credit as being the initial "Trades Union" of America.

Such as this, together with the eternal bickerings, backbiting, vituperation of the sections of medicine that both individually and as a whole abused each other, openly or by inuendo, led many people to:

14th. Consider favorably the various "cults" that offered a haven of rest. Discrediting, alike, all "licensed" physicians, as merely business rivals. These prominent factors seem, in one form or another, to have complicated and weighted medicine, from all time.

Thus we find, for decades, educated men who differ from each other in therapeutic opinions, continuously wasting their energies in attempts to suppress, by law, their no less competent rivals, neglecting, in such antagonisms, to consider the education of the people as a whole. Cagliostro was not the first professional "quack," nor was Hembold of Buchu fame the last non-professional. This is demonstrated by literature, both remote and modern.

What is the result? We find that processes designed most altruistically have been accompanied by, if they have not indeed bred, continuous rebellion in the people, distrust of the physician, antagonism against legalized medicine. If not suggestive of, they have not prevented the formation of series of "cults" and fanatical semi-therapeutists, differing from each other but yet united alike in discrediting "legalized" medicine.

PART V.

HAVE THE PROCESSES THAT DOMINATE THE PROFESSIONS BEST SERVED THE PEOPLE?

Do we not find to-day that millions of dollars are being made by advertising of mysterious cure-alls, where formerly thousands, perhaps hundreds, only, were culled from the people? Do we not find display advertisements by non-medical men who recklessly and extravagantly use money, in ways heretofore deemed unthinkable? Do we not find insidious reading articles lavishly distributed in widely read prints in America, reaching every home, in every language? Do we not find that the "Get Rich Quick" schemers no longer need disport a gold mine in the far-off, mysterious valley of the Great West, or display a tinseled "Gold Brick" to entangle their dupes? Do we not, in fact, find that *law* not only does not now protect the people, but that it has never protected them from "cure" imposters? Does the closing of medical colleges that differ in therapeutic teaching, or in "scientific" equipment from those protected by laws, or equipped to the limit by donations most laudably intended, either suppress "quackery," or educate and protect the people.

"THE UNEXPECTED."—With the above thoughts in mind, comes now to view the unexpected. Strange as it may seem, laudable aims voiced by the cry "Higher Medical Education" seem to have resulted, with the people as whole, in the opposite of what was intended. The country seems now perilously near to *no medical education*, so far as the home physicians are concerned. And comes to view a strange combination and uniting of interests, quackery personified and ultra-altruism in idealistic therapy.

It needed no prophetic mind to discern that the higher and more expensive the standard of education, and the longer time demanded, the fewer family physicians would be licensed. The more expensive the course, and the longer the time devoted to the education of the physician, the fewer can afford to enter the field. Those qualified elect a specialty and locate in the cities. This is a mighty country, exhibiting vast plains, great mountains, empire-like valleys, recesses afar from the city home. Close at hand seems the day that is even now dawning, when great tracts of country will be devoid of the old-time, capable physicians, so welcome to the home, so necessary to the community. The people still suffer from disease, the child in the little home on the mountain or on the plain still needs

professional care. Comes, naturally, from such as these, as the physician friend passes out, the harvest of the advertiser.

Postal service is being given the vast recesses of the country, as never before, in the direction of both literature and materials. As never before are the opportunities of the advertiser multiplying.

EXTREMES MEET.—Thus we find as already stated that two discordant elements are now possessed of the same ideal; one deeply hopeful of higher educational qualifications for the physician, because of his altruistic views; the other concerned in the same cause, because it seems advisable to sound the death knell of the old-time American "Family Physician." With enthusiasm the one views the restricted, highly educated classes in the university departments, and rejoices in the passing out of the independent old-style medical colleges of the land. The other, for a different reason, silently rejoices, but likewise considers this to be a blessing. He studies new methods to reach the people. He insidiously cloaks his advertisements, and propagates artful schemes heretofore unknown, viewing complacently the passing of both the apothecary of old and the family physician. He notes with satisfaction that the highly educated physician of the present seeks a specialty in the city. He artfully introduces his advertisements to a people to whom the faithful Family Physician, the guiding spirit of the past, but no longer a caretaker in the home, is fast becoming but a reminiscence.

The End Reaction.—"After the war there will be a rearrangement in economical processes and in American business methods," a saying now often heard. After the war of the medical classes, "for there has been a medical war of over a hundred years in America," WHAT?

This writer hopes that by some balanced method the care of the people may again become a duty of the ever-welcome, faithful family physician. He hopes that the cause of higher medical (I prefer the word *better*) education may increasingly prevail, that every university of the land may have greater classes in medicine than ever were known, and also that increasingly new university departments may open to assist in their education but yet that during the transition period the people will not be deserted. He accepts this will be the case, and that in a time to come the influence of these highly schooled men and women will exert itself in every nook and corner of America. But, he believes that, unless leaders in this field cease their selfish bickering, consider the cause of medical education as a trust whose object is the care of the people, not the building up of institutions or giving legal preference to their own graduates; recognize that all men cannot (and need not) attain the same degree of effectiveness in order to serve the people, and that half a loaf is better than none to the person starving, quackery will increasingly for a long time prevail over great sections of America. That hopelessness other than comes in the advertiser must be the part of innumerable families in homes afar from the "high-bred" physician. Cure-alls made by quantities in great laboratories devoted to the "care of the people" by almanac processes must multiply, fortunes made thereby will, unless professional methods change, shame Helmbold when, as in his palmiest day, he sold a six-ounce bottle of a weak decoction of Buchu in carload lots, one dollar a bottle.

PART VI.

OUR DUTY.

In my opinion, it is clearly the duty of the physician to be a therapeutic *teacher of the people*, not a member of an autocratic class, dealing in mystery or dominated by exclusive ideals that hold the people aloof. And it is the duty of the pharmacist to support the physician in this laudable effort.

Should not one and all accept that educated laymen are competent to comprehend balanced advice, also that the unschooled are capable of learning, and that it is better for all to be taught by men qualified to instruct? Every physician in family practice surely has it in his power to instruct the mother, the father, even the young, in sanitary care and in emergency opportunities, regardless of their schooling. Even a young country lad may be shown how to bandage a wound, what to do to prevent lockjaw when a rusty nail penetrates the bare foot, how to care for a boy's "stone bruise," and how to resuscitate a half-drowned comrade.

Home medicines should not be the charge, or even the *opportunity*, of the non-professional advertiser. They should be found in every home, under the care of the physician. It costs little to provide a cabinet of first aid simples to be used in the physician's absence, in cases such as diarrhea, cough, croup and kindred affections. Were standard home cures, with directions for use, formulated for such emergencies, by professional local medical societies, the formulas to be placed in the hands of associated physicians, the compounds to be made by home pharmacists generally, the cause of home treatment would be simplified.

Was it improper for Dr. Squibb, during the prevalence of the cholera in the '60's, to give a process for "Squibb's Diarrhea Cure," a preparation accepted by boards of health in every American city, and by physicians and druggists, everywhere? Were not the methods of Beach, King, Scudder and their predecessors, as shown in this study, wisely instituted, *if the object of medical education is the care of the people's health?*

Surely it is not improper for introductory works on anatomy, physiology, etc., a "Home Physician" written by proper authorities, teaching, helping, serving, educating the people, to have a place in such balanced instruction.

THE PHARMACIST should become the physician's ally in it all, and he must so become, if these processes prevail. When this is accomplished, the pharmacist will cease distributing "cure" circulars for outside "manufacturers," he will become interested in the physician's home-care problem, and he will feel encouraged in becoming proficient in his present fast-fading (under conditions now prevailing) art.

It might now be asked of the writer, since I am not and never have been interested as a business in home treatment, why do I favor this home-care procedure? An answer might be, that I have been taught in apprenticeships, over half a century ago, and by fraternal relations with physicians, since, that on the *medical* profession (not the pharmaceutical) rests the responsibility of treating the people in disease. The province of the pharmacist is in my opinion to compound, not to prescribe (unless in emergency cases).

I accept now, as ever, that the physician only is qualified to select desirable therapeutic agents and compounds, and establish the dosage. The physician is the one meeting home complications and should direct the crusade in the people's behalf. He can guide them authoritatively and educate them in the balanced use of legitimate home-cure simples, that under his authority shall be prepared by the pharmacist. He can guard the people against habit-forming drugs, pernicious compounds, harmful processes, and, being devoid of *business* complications and entanglements, protect them against impositions.

> *My dear Dr. Wilbert:* I have given you, without reserve, and at your request, this study and these conclusions. I consider it an honor to have been thus asked by you to do this for you. Please do not accept that I am at all disturbed over past processes or disconsolate over the "end reaction." Balanced thought of those who are ever ultra-ethical must surely lead, as you have seen, to the conclusion that the home care and education of the family, after the method of the section of the profession of medicine to whose pharmacy I have devoted my life efforts, are not improper, but are even, from my standpoint, the *duty* of the educated members of all sections of the medical profession.
>
> JOHN URI LLOYD.

OUR PHARMACEUTICAL CONVENTIONS—WHY WE SHOULD ATTEND THEM.*

BY FRANCES M. GREENWALT.

Did you ever ask a brother pharmacist whether he expected to attend some approaching pharmaceutical convention, and get some answer like this, "No, I'm not interested in such things," or "No, it's the same old stuff, with the same old crowd running things," or the still more common replies, "I can't afford it," or "I haven't time?"

Of course you did, and you wondered whether there was something wrong with your state, or national association, or whether the fault rested with the individual pharmacists.

I think most of us will agree that our various professional organizations are forging ahead and our disinterested pharmacists are losing out by not attending these conventions, although they unknowingly are deriving some of the benefits from the untiring efforts of the "same old crowd."

Consider the work of our revision committees of the U. S. P. and N. F. Every practicing pharmacist must have those two books to intelligently compound prescriptions. Year after year the same men are doing the work, and they are here at these conventions, giving their various reports, seeking for additional help and information, and solving the problems of the profession.

It is indeed a privilege to meet these enthusiastic pharmacists, for if one has a tendency to slump or to follow the lines of least resistance, he is immediately aroused from his state of lethargy and cannot help but feel a renewed interest.

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* Section on Practical Pharmacy and Dispensing, A. PH. A., Buffalo meeting, 1924.

These conventions serve as a "professional revival," if nothing more, and we have any number of "Billy Sundays" in the persons of Kraemer, Pittenger, Newcomb, Rusby, etc.

I was particularly impressed with the work of the Conference of Pharmaceutical Faculties at the Asheville meeting last year. I do not think that the average pharmacist fully appreciates the work done by this college group, but it is this particular group which has raised the standards of pharmacy and has brought about legislation in the various states for "prerequisite training."

To the man who says he has not time to attend conventions, or that he cannot afford to attend, I would say that every one owes it to himself to spend some time and money on a vacation each year. Usually he can combine business with pleasure particularly at the state association meetings. He can get many new ideas on merchandising from the many exhibits and thus receive an actual profit in dollars and cents.

It will do his soul good to brush aside some of the old rivalry and hatred toward his competitor of his home town, and really get acquainted with him. Some one once said that he could not hate a man if he actually *knew* him.

Those pharmacists who are wont to speak lightly of the work of our various associations are usually the ones who do not even read the drug journals. They never give a thought to the problems or to the achievements of the profession. They accept the drug peddler and the patent medicine vendor as necessary evils and they do not try to work out the remedies for getting rid of them.

They *hope* that their state legislatures will enact laws to restrict the ownership of drug stores to licensed pharmacists, but they do not make any effort to influence their legislators in any way to accomplish what we all want. It is only by the combined efforts of all pharmacists that helpful legislation for our profession may be brought about. The old adage, "In Union there is Strength," holds true in pharmacy. What we need in our association is a large enrollment of live members.

A great problem of the profession is the "boot-legging druggist." Unfortunately this despicable practice is not confined to a very few. We cannot expect the prohibition agents to ferret out all offenders for there are too many of them and they are most clever in concealing their iniquities. It is up to the druggists themselves to take a hand in punishing the offenders. Then the ethical men can uphold the standing in their respective communities which they, as law-abiding pharmacists, merit. If there must be boot-leggers, let them not, in the name of pharmacy, hide under the cloak of our profession.

A word or two might not be amiss at this gathering, in behalf of the All-Pharmacy Building. I can add nothing to what has already been said by our leaders of American pharmacy to point out the need of this building fund.

Many of us have not as yet made our donations and some of us may feel that we, as individuals, may not derive any special benefit from such a building. Granting that such may be true in some individual cases, we should put aside any thought of personal gain, and as an expression of appreciation, a memorial as it were, in behalf of the efforts of those men and women of our ranks who have labored before us, and as a monument to pharmacy of the future, let us close this campaign with a material expression of true appreciation, in pledges of real American dollars.

THE DRUGGIST AND HIS ASSOCIATIONS.*

A PLEA FOR THE MORE COMPLETE ORGANIZATION OF PHARMACY.

BY J. H. BEAL, URBANA, ILL.

Our occupation, sometimes known as the practice of pharmacy and sometimes as the drug business, owes these different designations to the fact that it is compounded of two distinct and sometimes opposing elements, each demanding a different kind of ability for its successful representation. It is at once both commercial and professional: the druggist is not only a merchant, but he is also something else than a merchant.

In some of its aspects pharmacy is as truly professional as the practice of law or medicine, while in others it is as truly mercantile as the grocery and hardware business, and these two partners have not always worked harmoniously together; one of them sometimes insisting upon going in one direction while the other has been stubbornly pulling in quite a contrary direction.

In consequence of this dual character, pharmacy has had to deal not only with problems common to trades and professions generally, but in addition has had to contend with some difficulties that are peculiarly and specifically its own.

The Scientific Method of Research.—In this wonder-working age we often see greater progress made in certain lines within a single year than was made in all the centuries past, and we have also seen many things accomplished that previously were thought impossible. This more rapid progress has not been because men have greater intellectual capacity or greater industry than formerly, but because they have changed their methods of research. Idle theorizing has been replaced by rigid analysis of the problems to be attacked, and the haphazard method of "trial and error" has been changed to systematic experimentation under carefully controlled conditions. The rule of thumb has been replaced by the scientific method and the modern research worker aims to proceed according to a systematic, carefully prepared program.

It will be only common prudence, therefore, for us, as far as we can, to divest ourselves of the prejudices of tradition and self-interest and examine pharmacy in accordance with the scientific method; to discover, if possible, how and where it fits into the scheme of civilization, and to what extent we can hope to direct its evolution, remembering always that the final result will be largely determined by the operation of social and economic forces which control the development of human institutions, regardless of the wishes of individuals or of society resolutions.

Pharmaceutical Associations as a Means of Coöperation.—One of the discoveries of the present age, or rather one of the things more distinctly recognized, is the superiority of voluntary coöperation over unrestricted competition as a means of social and professional progress, and for pharmacy voluntary coöperation means the willing and enthusiastic support of national, state and local associations.

In one of my earliest papers I characterized association membership as the pharmacist's business insurance, and argued that common business prudence demanded that he should contribute to the support of his professional associations as regularly and as universally as he contributes to the support of fire insurance

* An address delivered before 1925 Meeting of California Pharmaceutical Association.

companies by the payment of premiums. The years of observation since then have served only to intensify this early conviction. I believe thoroughly in the necessity of the separate organizations of pharmaceutical manufacturers, wholesalers, retailers and proprietary manufacturers, and in the equal necessity of their continuous and harmonious coöperation.

The growing craze for legislation to meet the ideas of doctrinaire reformers and the constant pyramiding of taxes required by ever-increasing public expenditure can be successfully combatted only by the concerted action of practically every individual connected with pharmacy and the drug trade.

Pharmacy is already abundantly supplied with associations in the form of skeleton organizations. We do not need more pharmacy organizations, but we do need a more complete organization of pharmacy; we need to create for the present associations such a body of membership, to give them such financial and moral support, and to develop such a common understanding and sense of common interest among their members as will make them really effective machines for the work they have to do.

The Place of the AMERICAN PHARMACEUTICAL ASSOCIATION.—Almost seventy-four years ago a group of New York and Philadelphia apothecaries, holding high ideals of duty to their profession and of their professional obligation to the public, met and organized the AMERICAN PHARMACEUTICAL ASSOCIATION, which during the nearly three-quarters of a century since then has been the chief exponent of professional and scientific pharmacy. When the Association was organized, specialization had not yet divided the drug trade into its present sharply defined branches, and consequently no effort was made to confine the membership to any particular line of pharmaceutical work. This generous expansiveness in membership still prevails. All persons of good repute and having legitimate connection with any branch of pharmacy—proprietors, clerks, wholesalers, manufacturers, professors in colleges of pharmacy, chemists, botanists, or food and drug officials—are all equally welcomed, and are afforded equal opportunity to present their contributions to the improvement of the branches of trade or science which they respectively represent.

The services of the A. PH. A. to professional and scientific pharmacy have been many and material.

When the fortunes of the United States Pharmacopœia had declined to such a low ebb that it was seriously proposed to abandon it to a private publisher, it was the A. PH. A. that came to its rescue, and it has been largely due to the influence of this society and to the unselfish contributions of its members that the U. S. P. has become the premier pharmacopœia of the world.

It created the "National Formulary" from a collection of local recipes, and it was through its efforts that the N. F. and U. S. P. have been accepted as the standards of the federal and state food and drug acts, and the trade saved the annoyance of separate drug standards in 49 different sovereignties, subject to alteration with every bureaucratic change of opinion.

One of the early undertakings assumed by the A. PH. A. was the creation of state pharmaceutical associations and securing the enactment of state laws requiring the examination and registration of persons desiring to enter the practice of pharmacy. The state associations were brought into existence by members of the

A. PH. A. in the several states, and a form of pharmacy law was draughted to be presented by them to their respective legislatures. Our state pharmaceutical associations are the result of this movement, and all our pharmacy laws are modifications, either of this early model law or of other models adopted by the A. PH. A. in later years.

The state associations were originally represented in the mother association by means of fraternal delegates to the annual convention, but now their representatives, together with representatives from the other national associations of the drug trade, constitute a *House of Delegates*, which elects the principal officers and functions as the legislative chamber of the Association. Thus it is the state associations that in the future will chiefly shape the policies and determine the destiny of the AMERICAN PHARMACEUTICAL ASSOCIATION.

At the last convention the House of Delegates elected as its chairman Mr. W. Bruce Philip, of California, who thus becomes a worthy successor to a long line of distinguished representatives of Pacific Coast Pharmacy who have ably served the A. PH. A. in important official capacities.

Because of its wide range of membership, selected from every division of pharmaceutical activity, and by virtue of the representation of the state and national pharmaceutical associations in its *House of Delegates* the A. PH. A. constitutes in fact a real and genuine FEDERATION OF AMERICAN PHARMACY.

The A. PH. A. represents specifically the drug end of the drug business. It stands for the professional learning and for the technical training and skill that justify the law in restricting the practice of pharmacy to a group of specially qualified persons. It represents what the diploma of the college of pharmacy and the certificate of the registered pharmacist stands for—the things that make the druggist more than a merchant. When these things cease to be the foundation of the drug business, the AMERICAN PHARMACEUTICAL ASSOCIATION will no longer be necessary.

The Place of the National Association of Retail Druggists.—With the growth of specialization in pharmacy and the sharper division of functions between manufacturers, wholesalers and retailers, the members of these groups have found it expedient to organize societies to more directly represent their special group interests, and it is altogether proper that this should have been done.

When under the stress of excessive competition trade abuses had accumulated to an almost unbearable degree, the National Association of Retail Druggists was created to represent specifically and emphatically the trade interests of the retail druggist. Its creation was in no sense a revolt against or a secession from the AMERICAN PHARMACEUTICAL ASSOCIATION, but was purposely intended to perform a kind of work that the A. PH. A. could not do effectively without departing from its traditional purpose to represent the professional and scientific interests of pharmacy.

The National Association of Retail Druggists emphatically endorses and supports all that the A. PH. A. stands for, but it addresses itself especially to functions that the A. PH. A., because of its plan of organization and the varied character of its membership, is not qualified to discharge.

To speak adequately of what this splendid organization of retailers has done for the retail drug business during its 26 years of existence would require more than all the time allotted to me on your program. It has given the retailer cause for

hope in situations where without its aid his case seemed nearly hopeless. It has defended him manfully, courageously and effectively in the courts of law, before legislative bodies and in the public prints. It has attained a standing and reputation such that political organizations which once regarded drug interests with silent contempt now come to its officers to inquire what amendments will be necessary to make their proposed legislation acceptable. I speak deliberately when I say that within the past ten years the National Association of Retail Druggists has been the main instrument in the defeat or correction of legislation proposed at Washington that, if it had reached enactment in its original form, would have made the retail drug business almost impossible.

As its general secretary it has one of the most capable men in American pharmacy, Mr. Samuel C. Henry, a man of sufficient independence of thought to stand by his convictions regardless of what forces may be against him, and possessed also of the diplomatic tact that enables him to combine with other forces when combination will best serve the interests of the retail druggist or of his association. Its executive committee and official list are composed of men nationally known, who give their time and energies voluntarily and without stint to the association and the cause it represents. It maintains at Washington an eminently competent and efficient legal representative and general counsel, always ready to serve the association and its members before the several departments of the federal government and in general legislative matters. It supplies its members with a live and up-to-date *Journal*, in which either the editorials or the Washington letters are worth more than the annual cost of membership.

The N. A. R. D. last year honored the drug trade of the Pacific Coast by electing one of its leading representatives, Mr. Frank R. Peterson, of Oregon, as its president. You will both honor and benefit yourselves by giving President Peterson and his association the fullest measure of support. If when the next convention is called to order at Memphis there is a single retail druggist on the Pacific Coast who has not sent in his application for membership in this magnificent organization he will be ignoring a plain duty to himself and to the vocation which yields him his livelihood.

The Place of the State Pharmaceutical Associations.—The state associations constitute an essential part of the plan for the more complete mobilization of pharmaceutical interests in the United States. They bear to the two great national associations the same relation that the individual states bear to the Federal Union. They are of fundamental importance to the protection of trade and professional interests within the states and to furnish the reserves from which the national organizations must draw their membership and their financial and moral support.

The state association is entitled to demand and should demand the support of every person eligible to membership. A mistake has been made in permitting it to be understood that membership in the state association is so purely a voluntary matter that any druggist may remain outside of the organization without discredit to himself, and as a consequence we have had the outline or framework of organization rather than really effective bodies capable of wielding the combined influence of the trade.

The druggist should consider the discharge of his obligations to his state association as important as the protection of his check at the bank. Not to be a supporter

of the organization which exists solely for the protection of his professional and business interests is not a proper exercise of personal liberty; it is the denial of a debt of honor which every man owes to his fellow craftsmen and to the occupation which gives him his livelihood. It is the voluntary acceptance of the rôle of business hobo—of one who is willing to live at the expense of his fellow craftsmen. If such a druggist cannot be persuaded by argument, if he is insensible to professional obligations, we should at least hold up the mirror and let him see himself as others see him.

Every state association should have at least one full-time organizer or traveling secretary, and in the larger and more populous states there should be several competent men constantly in the field to preach the gospel of organization, to recruit new members, to keep the old members up to the proper pitch of enthusiasm, and to compose local misunderstandings liable to jeopardize trade interests. These agents should not be merely good fellows willing to accept a job at the expense of the association, but men picked for their capacity, energy and enthusiasm, and they should be paid and supported accordingly.

When retail druggists have universally been educated to a proper sense of obligation to their state associations, when the membership of these has been recruited to practically the entire number of retail druggists, and when the state associations and their members stand solidly behind the national organizations then, and not till then will pharmacy begin to come into its own.

The Place of the Local Associations.—Lastly, but likewise of very great importance in the plan for the more complete assembly and unification of pharmaceutical interests, come the local associations in the cities and larger towns, in counties, and in larger geographical districts where conditions demand them; all of which local bodies should be constituent units of their respective state organizations.

Trade currents always flow more smoothly in districts where there are active local associations than in districts where there are none. No means have been discovered to prevent the occurrence of trade misunderstandings, but when they do occur, local associations are the best means yet devised for composing them. When disputants can be induced to come together for friendly conference there are few differences that cannot be amicably adjusted. Even weekly luncheons together of local druggists have a wonderful influence in producing and maintaining friendly relations. Men who frequently meet and break bread together are not likely to remain jealous business competitors.

Local associations certainly have a large and important part to play in the complete organization of pharmacy.

What the Complete Organization of Pharmacy Means.—The complete organization of pharmacy means the assembling into national, state and local associations of practically every member of every division of pharmaceutical interest.

It means that the membership of the state and local associations will include practically the entire body of retail druggists, and that through these the A. PH. A. and N. A. R. D. will become the great National Congresses of Pharmacy, the one to conserve its professional and scientific features, the other to develop and defend its commercial and trade interests, without which the professional and scientific features cannot hope to survive.

It means that such associations as are now skeleton organizations in which a few unselfish men do the major portion of the work and bear the chief financial burdens will be replaced by thoroughgoing, business-like bodies active in the defense of professional and trade interests through 52 weeks of the year, instead of largely social organizations exhibiting signs of vitality only during the week of the annual convention.

It means that we are to stop playing at association work and take it up in a business-like, common-sense way, and that the personnel of pharmacy will be closely knit together by a strongly developed sense of common interest and of common professional obligation, with an importance and influence it has never before possessed. If this is a dream, it is one that has made substantial progress towards reality in the past ten years. Its complete realization is possible if pharmacists possess or can develop the same degree coöperative of intelligence that is exhibited by union labor.

With such a mobilization and unification of the forces of the drug trade, hitherto largely unused, there is nothing decent and reasonable in the way of constructive or corrective legislation that we cannot hope to secure, and nothing unfair or unreasonable that we cannot hope to defeat.

Such a plan of organization will cost money! But it will be worth all the cost, and the more it costs the more it will be worth. If the expense should reach $100 a year for every individual member it would still be below the value of the possible benefit. In these days when legislative bodies are searching earth, air and seas for new sources of revenue with which to pay for socialistic experiments, even one unfair tax bill defeated may save more than the combined membership fees of all the associations.

Policies To Be Agreed Upon Respecting Legislation.—Our present task is not only to bring about this more complete assembly and mobilization of pharmaceutical forces, but also to accumulate a common stock of ideas and opinions respecting the problems to be attacked and the particular policies to be endorsed.

By virtue of necessity, the relation of the pharmacist to the law must be a matter of interest for many years, but we shall be better employed in seeking relief from existing restrictions or in defending ourselves against new ones, than in proposing legislation designed to give us some special trade advantage. The use of the law for business advancement is in violation of the fundamental principles of free government. More frequently than not, a law of this character produces results entirely different from those intended, and becomes a broken reed piercing the hand that leans upon it. We have no right, and I trust no desire to ask the government to provide us with a livelihood, but only for a free and fair opportunity to earn one for ourselves.

That there will be legislation we shall want to oppose, and plenty of it, we may feel assured. As we know to our sorrow, law-makers seem to have a special fondness for legislating upon subjects about which they know little or nothing, and of all the possible subjects of human knowledge there are probably few of which they possess so little real information as of the problems involved in the dispensing of drugs and medicines. It is because of this that the drug business, beyond any other calling, has been harassed by unnecessary and burdensome regulations and is pes-

tered with the necessity of defending itself against additional taxes and foolish requirements at every meeting of the legislature.

The first principle upon which we should be in thorough agreement is that we will neither endorse nor advocate any legislative measure or professional policy that will be inconsistent with general public interest, or unfair to those who are in legitimate competition with us.

We profess adherence to this principle not because of any excessive sense of altruism, but for the very substantial and common-sense reason that advantages gained at the expense of public interest or unfairly at the expense of those in competitive lines will in the end invariably react against those who are responsible for them; eventually there will be either hostile legislation or trade reprisals that will more than offset any temporary advantage gained through a narrrowly selfish policy.

It will therefore be a policy of prudence to sometimes forego an apparent opportunity for immediate profit for the sake of benefits more remote. This is a choice not always easy for weak human nature to make, but it is one the wisdom of which is abundantly verified by experience.

Advocacy of the Sherman Act an Example of Short-Sighted Policy.—Of measures professedly in the public interest, but actually designed to advance some particular class interest American legislation affords numerous instances, one of the best advertised being the anti-monopoly legislation embraced in the Sherman Act, which is also a fine example of a measure advocated by retail merchants that has ultimately reacted to their great disadvantage.

Those whose recollections go back to the period when the great combinations known as "Trusts" began to be created will recall that the chief incentive to their formation was that by reducing the number of operating establishments and the number of employees, the overhead cost of production was so greatly decreased that the combinations could easily under-sell their smaller competitors, sometimes to the extent of putting them completely out of business. As a consequence the smaller manufacturers and tradesmen hurt by the new competition and the laboring men and salaried employees displaced united in a nearly unanimous demand for restrictive legislation.

Political economists and a few far-sighted statesmen urged that since trust combinations reduced the costs of production and distribution they were actually an economic discovery, analogous to the invention of labor-saving machinery, and that they should not be prohibited but regulated in such a manner as to secure a proper share of their savings to consumers and to prevent them from being used to crush their weaker competitors. The short-sighted policy prevailed, however, and in the Sherman Act, under the pretense of regulation, it was sought to restrain the creation of trust combinations, instead of trying to prevent them from being used oppressively.

Ostensibly the statute sought the public benefit, since it professed to foster open competition and to forbid monopolies in restraint of trade; but the real intent of its most ardent advocates was to stifle a variety of competition which they did not know how to meet.

We are now far enough advanced in experience to properly appraise the results —which have been practically what the economists predicted they would be. The

owners of large capital soon learned that it could be aggregated and used so as to obtain all the results of trust combinations without coming within the positive terms of the law. When it was attempted to apply its penalties to agricultural and labor combinations, these two powerful voting groups made such vigorous objections that Congress promptly relieved them from compliance with the Act. So complete was the relief afforded that representatives of labor and agriculture may, if they like, meet on the steps of the Capitol at Washington, and in language of their own choosing resolve to increase the prices of their services and products, and go unwhipped of the law.

When it was found necessary to rehabilitate the railroads from near bankruptcy due to foolish legislation, Congress again came to the rescue with measures which permit and in some cases command the very kind of combination which the Sherman Act originally prohibited. Merchants and manufacturers are permitted to indulge in ruinous price cutting to the point of mutual bankruptcy, but a railroad may not reduce a freight or passenger tariff without the approval of a federal bureau and proof that the reduction will not embarrass a competing line.

The law has been completely effective in one direction only. It has effectively prevented weak voting groups, such as retail merchants and professional men from taking concerted measures for their protection from their larger and richer competitors. When retail druggists undertook to protect themselves from trade piracy by means of the direct contract and serial numbering plan, they were promptly met by the Indianapolis decree which declared their combining for this purpose to be an unlawful combination in restraint of trade.

By a species of poetic justice, therefore, the groups now most severely restrained by our so-called anti-monopoly legislation are the very groups originally most insistent upon its enactment.

So-Called Price Protection Legislation.—It is from this disability imposed by anti-trust legislation that the drug trade has long been striving to deliver itself through the enactment of such measures as the Kelly, formerly the Stephens Bill, and the Merritt, Williams and Wyant Bills which are frequently lumped together under the title of "price protection" or "price maintenance" bills. These designations are unfortunate, since the object of the bills is not to enforce the sale of any particular article at a specified price, but to enable the manufacturer of a trade-marked product to control its distribution and the channels through which it is distributed until it reaches the hands of the ultimate consumer. This is a right which was freely exercised under the Common Law, and which is exercised by manufacturers in every country except the United States. Under our anti-trust laws, however, it has been decided that although a proprietor may choose the customer to whom he will sell his products, he loses the power to control their further distribution after he parts with title to them, and consequently that contracts designed to restrict their subsequent distribution to specified channels constitute unlawful combinations in restraint of trade. Since, under modern trade conditions, it is practically impossible for manufacturers of trade-marked goods to sell directly to consumers, these decisions are practically equivalent to saying that the manufacturer has the right to control the destination of his product, but that it is unlawful for him to take any practical steps to exercise that right.

We know, not as a theory but as a fact, that this interpretation of the statute

is used as a cover for deceptive and dishonest trade practices, and as a means of working off upon the public inferior non-advertised goods which pay the dealer a greater profit.

The restoration of the right of the manufacturer to control absolutely the channels through which and the conditions upon which his trade-marked goods are distributed, as proposed in these bills, is a right not only perfectly compatible with but actually favoring the public interest and they are, therefore, measures which we can in good conscience support. These bills are in fact repeal measures and in advocating them we are not seeking to impose additional restrictions upon trade, but on the contrary are seeking the removal of existing restrictions upon the right of contract.

We are not among those who believe that the Government should guarantee a profit to the farmer, the mechanic, the druggist or to any others, but we do firmly believe that every citizen should have the right to secure a fair profit for himself by means of open contract, a Common Law right which has been unjustly taken away from him.

Legislative Measures Should Be Thoroughly Debated before Enactment.—Another principle upon which we should be in agreement and upon the observance of which we should strongly insist is that every proposed legislative enactment affecting pharmacy shall be made the subject of prolonged and critical debate before it is permitted to become a law, and that the longer and more complicated the measure the greater shall be the time devoted to its consideration.

It is possible for almost any lawyer with a fair command of English to prepare a bill that is grammatically acceptable and that superficially at least seems to comply with constitutional requirements, but no single human intelligence is great enough to foresee more than a fraction of the reactions likely to occur when as a law it is practically applied to the regulation of human affairs.

In illustration of this point we have two prominent Federal statutes of the present century, one enacted only after lengthy and careful study, and which has been eminently successful, and another more hastily enacted, of which the same eminent success cannot be asserted.

The Federal Food and Drugs Act was the final result of a series of bills introduced at various sessions of Congress, each of which received prolonged and serious consideration. Hearings were held until every one who wished to present arguments in opposition to the proposed legislation had been heard. Changes were made as their necessity was pointed out until the final result was a comparatively brief and simple measure containing a few plain definitions and a few direct prohibitions which any citizen of average intelligence can easily understand. Although it intimately concerns the food, drink and medicine of every citizen, and affects the business of a larger number of manufacturers and dealers than any other measure enacted by Congress, it has been one of the most successful laws ever placed upon the Federal statute books. It has been efficiently enforced from the very beginning, and works so smoothly that the average citizen is scarcely aware of its existence. Though Great Britain adopted food and drug laws long before they were attempted in this country, a special committee of the British Parliament has commended our statute as the most efficient food and drug law ever enacted.

The second example is the Federal enactment prohibiting the manufacture and

sale of alcoholic liquors for beverage use, a very lengthy and highly complicated measure introduced and enacted within the period of a single session of Congress, and like all hastily enacted statutes affecting great interests, it abounds in definitions, parenthetical clauses, provisos, exceptions and prohibitions.

The workings of this law and the extent of its observance is a matter of common knowledge. A very considerable number of those who in all other respects would be deemed good citizens exhibit a strong resistance to the law, or to certain of its provisions, and yield obedience only so far as they are by actual force compelled to do so.

Beyond a reasonable doubt a liberal majority of the best citizens of the nation are in sympathy with the purpose to correct the evils resulting from the improper use of alcoholic beverages, but only a small fraction of such citizens have made a critical study of the provisions of the statute by which this purpose is sought to be accomplished.

The statute is one which it is especially difficult to discuss in a cool and unimpassioned manner. If one attempts to point out its good features, he is liable to be assailed as a fanatic by the radical wets; if he attempts to point out what he believes to be evident errors and blunders, he is cited by the radical drys as a particularly bad specimen of American citizen.

If the American people ever cool down to the point where they can discuss this law without throwing verbal brick-bats at one another, they will probably find themselves driven to the acceptance of one of three conclusions:

1. That the total prohibition of the beverage liquor traffic as attempted by the Volstead Act is radically wrong, and that the law should be repealed, or

2. That a large proportion of American citizens are inherently vicious and resistant to law and order beyond anything we had previously deemed possible; or finally,

3. That the law contains serious defects, either in form or in substance, that might have been discovered and corrected if previous to its enactment it had been subjected to the same prolonged and critical scrutiny that was bestowed upon the measures out of which was finally evolved the highly successful Federal Food and Drugs Act of June 30, 1906.

When it is remembered that more than 300 closely printed pages are required to explain the provisions of this law which every citizen is expected to understand and obey, and that the accuracy of many of the explanations is disputed by numerous able lawyers, it should not be difficult to decide as to which one of the three above suggested conclusions is most nearly correct.

The lesson for Pharmacy in the reactions of the public to these two statutes is that the best friend of proposed legislation is the one who points out the greatest number of possible faults and objections, regardless of whether he is trying to secure its defeat or to help in its enactment.

The Separation of Professional Pharmacy from Mercantile Features.—An old controversy which it is sometimes suggested should be settled by legislation is that between those who, on the one side, contend that pharmacy should be divorced from all of its so-called side-lines and made to confine itself exclusively to the dispensing of drugs and medicines, the compounding of physicians' prescriptions and other similar functions, and those who, on the other side, contend that such a limi-

tation of functions is visionary and impractical, and under existing conditions entirely impossible.

The traditional claims in behalf of the complete divorcement of professional pharmacy from its present mercantile affiliations are chiefly as follows:

1. That professional practice is, or should be governed solely by ethical considerations, and that mercantile pursuits, if not exactly unethical, are from their very nature at least non-ethical.
2. That such a separation will greatly advance the dignity and professional prestige and increase the financial rewards of the pharmacist.
3. That it will enable pharmacy to render wider and better service, and add to the safety and convenience of the public.

These, however, are not arguments, but a complex of assertions which must be resolved into simpler forms before we can, with our present knowledge and experience give them intelligent consideration. We must not let our wish for things as they might be blind us to the practical reality of things as they are.

Even if the practice of pharmacy should be entirely divorced from its sidelines, it would still be impossible to separate it completely from commercial considerations. The compounding of physicians' prescriptions and the testing and standardizing of medicinal preparations may be labors of professional character and require professional training for their execution, but the successful marketing of such products is as much a mercantile problem as the marketing of butter and cheese.

This question of the separation of pharmacy from its mercantile features is just now of especial interest for the reason that there is a growing movement entirely outside of the drug trade in favor of the same theory. Retail merchants' associations are declaring that while the druggist claims the right to handle anything not too large to pass the front entrance to his store he is at the same time desirous of limiting the privileges of other retail distributors. Bills are appearing in state legislatures proposing to make it unlawful to sell articles of food and drink in establishments where drugs and medicines are dispensed which, of course, would exclude the sale of confectionery, ice-cream and soda-water from drug stores. These measures are defended on the ground that when foods and drinks are sold in drug stores they are liable to be contaminated by the accidental introduction of poisonous drugs, and also that the sale of soft drinks affords opportunity for the surreptitious dispensing of alcoholic liquors and of habit-forming narcotic drugs.

To us such arguments seem too trivial for serious consideration, but they are well calculated to appeal to certain classes of fanatical reformers, and we should be careful, therefore, that no hasty expression or ill-considered action on our part shall give them any appearance of validity.

Sound Ethics Always the Basis of Sound Business Policy.—We have no quarrel with those who insist that professional pharmacy is an ethical pursuit and should be conducted in strict accordance with the code of professional ethics, but we have a serious difference with those who assert, or imply, that the purely mercantile features of pharmacy are not every whit as respectable and in the nature of things fully as ethical as its professional features. A successful business policy always has an ethical basis, even if its rules are not commonly set forth in a formal code of ethics.

The merchant who aims to extract the largest possible profit and to yield the least possible value in every transaction is not a business man, but a buccaneer in business; and the unfortunate who deals with him is not a customer but a victim. The true merchant regards a satisfied customer as his strongest asset, and aims to create a bond of common interest that will make him a permanent customer. His interest in his customer is not merely temporary; he wants him to be permanently prosperous in order that he may continue to share in that prosperity. He regards the immediate transaction as only one of what he hopes will be a long series of similar transactions each of which shall pay him a profit. Hence the first principle of business ethics is that every transaction must be mutually profitable to both buyer and seller: the buyer must feel that his purchase is worth the price paid for it; the seller that he has received a fair reward for the goods or service delivered.

Doubtless there are many who attempt to do business upon other than an ethical basis, but the foundation of a permanently successful business policy will always be found to embrace the qualities of strict integrity, fair dealing between man and man, the recognition of reciprocal obligations, due consideration for the rights of others and a spirit of mutual helpfulness—all ethical principles that long ago were summed up in the rule that is the foundation of all ethics: "Whatsoever ye would that men should do to you, do ye even so to them."

The ethical quality of the rules of business is not tainted by the fact that they are dictated by an enlightened sense of self-interest. Religion is admittedly ethical, and yet the whole scheme of religion, savage and civilized, is built upon a system of promised rewards for those who follow its precepts and of threatened punishments for those who reject them.

We, therefore, totally dissent from the view that sound business practice is any whit less ethical than sound professional practice, or that the so-called professional features of pharmacy are in any degree contaminated by association with the sale of soda-water, hair nets, fountain pens and alarm clocks.

Number of Purely Prescription Pharmacies Limited by Conditions.—The claim that the separation of pharmacy from its side-lines would give the public better drug service and yield the pharmacist better financial rewards is also of doubtful validity.

The public usually gets what it wants, and the best measure of what the public wants is what the public buys. If there were a striking demand for cigarless, ice-creamless and soda-fountainless drug stores they would soon appear in numbers. That the sale of non-medical merchandise by the druggist is regarded as a public convenience is abundantly evidenced by the enormous daily demand for such merchandise. People will not cease to buy and use the articles included in side-lines, even if druggists do cease to sell them; the only difference would be that the profits on such business would be diverted to other classes of dealers.

Moreover, with the reduction in volume of sales which would result from the elimination of side-lines the percentage of overhead expense would increase until, in the less populous communities, the drug store would pass completely out of existence, which could be of advantage to neither druggist nor the general public.

Regarding the side-lineless drug store, then, the reasonable conclusions would seem to be:

(1) That while it may be desirable to increase the number of purely prescription pharmacies where only drugs and medicines are dispensed, as rapidly as con-

ditions permit, there is a limit to the number of such establishments that can be profitably maintained; and if their present number should be very greatly exceeded all of them would become unprofitable.

(2) That in the less populous communities the total consumption of strictly medicinal articles is so small that a pharmacy without side-lines could not exist, and the enforcement of such a limitation would result in completely depriving such communities of necessary drug service.

(3) That in the nature of things the handling of non-medical merchandise is no less ethical than the compounding of physicians' prescriptions, and there is no reasonable ground, therefore, for considering the one as non-ethical and the other as ethical.

(4) That as every pharmacist is now free to reject side-lines and to conduct a purely prescription pharmacy if he so desires, so should the law leave him equally free to add side-lines to any extent that in his judgment existing conditions render necessary.

The Drugless Drug Store and the Sale of Drugs By Unqualified Vendors.—The proper relation of non-medical side-lines to pharmacy is, however, a minor question compared to the problem presented by the so-called "drugless drug store," a title assumed by certain establishments in which the expensive necessity of registered managers and assistants is evaded by confining the business to the sale of package drugs and medicines, and by refraining from the compounding of physicians' prescriptions.

By no method of interpretation can the title "drugless drug store" be given an honest meaning. If the establishment is truly drugless it cannot be a drug store; if it is truly a drug store it cannot be drugless. It is merely an impudent attempt to appropriate the credit which long years of faithful service have earned for the drug store without assuming the legal burdens and responsibilities imposed upon those who use the title honestly and consistently.

The business of the drugless drug store, or the selling of drugs and medicines without qualified supervision, is simply an old business under a new name, and has been with us as long as the pharmacy acts—it is only the offensive mendacity of the new title that has awakened fresh indignation over an old abuse.

The bare statement of the case shows its unfairness. The registered pharmacist employing registered help is burdened by a multitude of legal restrictions, tax impositions and fees, all for the privilege of dispensing drugs from bulk and of conducting a prescription department that in many cases does not pay the overhead expense which it involves, while his unregistered competitor is permitted to transact 80 to 90 per cent of the more profitable business without any of these burdens and impositions.

One remedy for this situation in which many place great confidence is that embraced in what is known as the "ownership law" which prohibits the use of such titles as "drug store," "pharmacy," etc., in connection with any establishment not actually owned by a registered pharmacist. It should be comparatively easy to secure legislation prohibiting these and similar titles when used deceptively, but will it be of any great utility to preserve our exclusive ownership of the several titles by which the practice of pharmacy is known, if the business itself can still be conducted under cover of some other name, or under no name in particular?

Let us be careful, therefore, that we do not fool ourselves with words, and, as we have sometimes done in the past, give up the substance of the thing desired for the sake of a name. Hitherto the most common method of dealing with such stores has been to urge the Board of Pharmacy to compel them to employ registered managers, with the result of converting them into permanent competitors having every legal claim to public patronage possessed by the registered pharmacist.

Ownership laws, to be effective, must protect the business of the pharmacist as well as his business designation, but upon what logical ground can we base a demand for such protection in view of the fact that pharmacy legislation can be justified only so far as it may be necessary to protect the public from the incompetent dispensing of drugs and poisons, regardless of any incidental effect it may have upon the pharmacist's business interests?

The considerations which restrain us from having confidence in the complete efficiency of an ownership law, *without other aids*, are, first, the ease with which the law might be evaded, and, second, the possibility that courts of last resort would be inclined to follow the doctrine laid down in previous decisions upon the same subject. These decisions are to the general effect that the proper measure of public safety had been provided when the drug, medicine or poison has been delivered to the purchaser in a package put up by a registered pharmacist, accurately labeled as to its contents and with proper directions for use, or with cautions against its misuse, and consequently that limitation of the ownership of the establishment in which final delivery of the finished package is made would tend to the creation of a monopoly, and therefore be contrary to general public policy.

Undoubtedly the general enactment of ownership laws—if their validity is sustained by the courts of last resort—will go far to correct a situation that is grossly unjust to those who comply with the requirements of the pharmacy acts, but let us not lose sight of the fact that a much more efficient remedy will be available if the common law right of manufacturers to control the channels of distribution of their trade-marked products can be restored to them. Since the sale of trade-marked merchandise constitutes the principal business of the unregistered druggist, a proper liberalizing of the Sherman Act, or the enactment of some such measure as the Kelly, or Williams Bills, will provide a far more effective means of correcting this abuse than a whole series of state ownership laws couched in varying terms and subject to varying interpretations.

TENTH EXPOSITION OF CHEMICAL INDUSTRIES.

The Tenth Exposition of Chemical Industries will be held at the Grand Central Palace, New York, during the week of September 28 to October 3. About twenty leading American colleges and universities have filed their applications for their students of chemistry and chemical engineering to take the one-week course of intensive training in practical technique of chemical engineering. More than 300 students are expected to enroll. A program of lectures for the course is being made up and will be announced later.

FIFTY-FIRST ANNUAL N. W. D. A. MEETING.

The fifty-first annual meeting of the National Wholesale Druggists' Association will be held in Detroit October 4–10. Transportation arrangements have been made, and the headquarters will be at the Book-Cadillac Hotel.

PHARMACEUTICAL EDUCATION IN NEW JERSEY.*

BY ROBERT P. FISCHELIS.[1]

Training men and women for the practice of pharmacy in New Jersey presents, broadly speaking, the same problems which are confronted in pharmaceutical education throughout the United States. Nor can one separate pharmaceutical educational problems from those of education in general. This is true for all kinds of professional education. The fundamental principles are the same. It has taken time for professional men to realize that a mere vocational training is not sufficient to supply the professions with workers who will build up these professions while at the same time rendering adequate service to the public. Medicine, dentistry, law and other professions have adapted themselves more rapidly to this changing view than pharmacy but we are traveling in the right direction now, and with sufficient speed, to do for pharmacy what the educational advances in medical, dental, legal and other types of professional education have accomplished for their respective callings.

One need not go back very far in the pharmaceutical history of New Jersey to recall the time when four years of experience in a drug store, presumably under a well-qualified pharmacist, was the only educational requirement exacted of a registered pharmacist. Many exceeded that requirement and were equipped with high school and college training but the doors of the profession were open alike to those without school or college training and those who possessed such training in the highest degree. Both types of applicants had to have four years of drug store experience and both had to pass an examination to become registered.

Theoretically, there is probably no better way of learning an art or a science than to sit at the feet of a master and imbibe what he, out of the richness of his years of experience and patient study, is able to impart. This carries us back to the days when men "read" medicine or law under experts and became prominent in the practice of their professions; when future chemists worked as laboratory boys under the able tutelage of famous experimenters, and when the apothecary of old took in an apprentice and taught the young man pharmacy in all its details from the ground up. But it has been many years since men "read" medicine under preceptors. Law schools are rapidly replacing the law office as a classroom. Chemists no longer sprout from apparatus washers and drug-store experience, as an exclusive means of educating pharmacists in the fundamental sciences underlying their profession, or even in the strictly pharmaceutical work of the drug store, is a thing of the past.

Pharmacists like men in other professions are too busy to train apprentices nowadays and very few modern drug stores would make adequate training schools for the all-around experience needed. Furthermore the day has passed when any single individual can be at once an expert in pharmacy, chemistry and materia medica and other subjects. So rapid has been the progress of science that those who call themselves scientists, while being generally informed in their science, profess to be specialists in only a small part of it.

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* Read before the New Jersey Pharmaceutical Association at Spring Lake, N. J., June 24, 1925.

[1] Vice-President of American Conference of Pharmaceutical Faculties.

More than a hundred years ago pharmacists in the City of Philadelphia began to realize that it would be advantageous if those desiring to enter the profession could receive instruction in chemistry, pharmacy and materia medica from acknowledged masters in these subjects rather than from a variety of preceptors possessing varying degrees of knowledge, and they organized the first college of pharmacy in America. New York and other cities soon followed. More and more the duty of training pharmacists has been shifted to the colleges and less and less "experience," in the original interpretation of that word, is supplied in the drug store. First-class colleges now give all the training necessary for the equipment of a pharmacist excepting that of contact with customers and meeting the many and varied situations which arise in the daily work of the drug store. Some are attempting to supply that also. This latter training is of the greatest importance and it is really what our Boards of Pharmacy to-day have in mind when they require drug-store experience as a qualification for registration. There was a time when "experience" meant chiefly prescription experience. To-day it means all-around experience. I hope the store-experience requirement will never be abolished entirely. It is as essential to pharmacy as the interneship requirement is to medicine and the law office-experience requirement is to law.

Conditions in the drug business being such that the training of pharmacists has been shifted definitely to the colleges, it is but natural that college education in pharmacy has been made a legal requirement for registration in many States and is on the way to becoming a legal requirement in all States.

New York was the first state to require a college education in pharmacy of its registrants. The Empire State has been a leader in much of the progress that has been made in professional education of all kinds. It has a wonderful school system and is particularly fortunate in the possession of good administrators. Its influence on the standards of professional education in other states has been most profound. The requirements for recognized colleges of pharmacy as laid down in rules of the Regents of the state of New York have been models for other states.

Pennsylvania followed New York in requiring college graduation of applicants for registration and now more than half of the states in the Union are on a college prerequisite basis. New Jersey did not join the procession until 1920, but since then it has made up for lost time.

With college training in pharmacy legally required in so many states, it becomes somebody's business to see to it that it is provided in proper measure and of proper quality. The duty of providing pharmaceutical education lies partly with the public, which, through legislation, has demanded it and partly with pharmacists as a group, whose pride of craft should awaken sufficient interest to see that its future members are properly trained. The duty of supervising the quality of the training provided comes properly within the jurisdiction of the Boards of Pharmacy.

There are throughout the country four general types of institutions teaching pharmacy.

The earliest type of pharmacy school was the so-called independent school organized by pharmacists and conducted by them. About one-third of the seventy-five or eighty pharmacy colleges in the United States still belong to that type or a modification of it. The general scheme of organization of these schools is that

followed by the first college in Philadelphia. An association of pharmacists interested in educating their apprentices was formed. This organization procured a charter, selected a governing body or Board of Trustees and the Trustees engaged a faculty, provided suitable quarters for lectures and laboratory work and upon recommendation of the faculty awarded diplomas to those who passed the required examinations. Originally these schools existed on the fees of students exclusively and, where classes have been consistently large, they have been able to provide a good faculty, proper equipment and accumulate a surplus to provide for future expansion. Educators in other fields might marvel at the spectacle of an institution of collegiate grade paying its own way without endowment, gifts or State support, but when it is explained that these colleges have been working on a three-day-a-week basis—that is having one class at the institution on Mondays, Wednesdays and Fridays, and the other class on Tuesdays, Thursdays and Saturdays—the feat does not appear so impossible. A building adequate for only three hundred students thus at once becomes adequate for six hundred. Overhead is reduced, fewer teachers or part time teachers are employed and instead of the customary deficits we may have surplusses. But we have reached the point where the pharmacy course is being lengthened in hours, days and years. This leads to the need of more space, more equipment, more teachers, full-time teachers, and more comforts for students. And all this costs money. So-called independent schools which have had to meet these new conditions find that whereas they formerly needed no outside aid, they must now appeal for endowment funds, building funds, or State support. In other words when pharmaceutical education reaches the level of other types of education its expense increases commensurately and colleges must either look somewhere for support beyond the fees of students or raise the fees beyond the capacity of the average student to pay. As a result we now have two types of independent schools. The independent endowed schools of which the Massachusetts College of Pharmacy is an example and the independent schools without endowment which endeavor to exist on fees of students. The Philadelphia and New York Colleges were examples of this type until recently but they have secured considerable aid from their alumni and manufacturers interested in pharmacy. It is the accumulated property owned by these institutions with its enhanced value that makes it possible for them to meet any development in pharmaceutical education with little difficulty. Were they to start out to-day without their property and donated funds on an independent basis to give the kind of a course they now give, the tuition fees would pay only a fraction of their expense. It is, therefore, futile for an independent school of pharmacy in this day and generation to expect to finance itself without a source of income beyond that of tuition fees. The independent, unendowed, unsupported colleges now extant will either become endowed or supported from the outside, or close their doors. The third type is the group of University and State supported colleges. They make up two-thirds or more of the total number of colleges of pharmacy in the United States. Ever since the University of Michigan began instruction in pharmacy in 1868 there has been a continuous growth of departments, schools and colleges of pharmacy in Universities all over the land and many independent schools have sought and obtained University affiliation.

University schools of pharmacy naturally enjoy the advantage of drawing

on the various departments of the University for instruction in chemistry, biology, economics and other subjects thus giving their students that broad cultural contact which is so desirable in all educational work. Likewise the department of pharmacy supplies a contact to the other divisions of the University which is helpful in gaining a better viewpoint for pharmacy among the non-pharmaceutical students who later spread that viewpoint in their respective walks of life. It is the ideal type of pharmacy school of the future.

The fourth type of pharmacy school is hardly worth mentioning. It is the type which is organized as a stock company or private venture on a purely money-making basis. With few exceptions it is limited to the "cram schools" which prepare applicants for board examinations. Schools of this character which actually attempt to give a course leading to a degree are taboo wherever there is strict legal supervision over pharmaceutical education. They could not exist in New Jersey to train pharmacists for this state.

It now becomes of interest to inquire into the regulations governing pharmaceutical education in New Jersey and the sources from whence the New Jersey pharmacists of the future are springing. Since 1920, the pharmacy law of this state demands that applicants for registration as pharmacists shall be graduates of colleges recognized by the Board of Pharmacy. In 1920 one year of high-school training was required by the Board prior to entrance upon a course in pharmacy at a recognized college. In 1921 this was raised to two years and in 1923 to four years, or high-school graduation. Next September the minimum course given by a college of pharmacy recognized by the New Jersey Board must be one of three years totalling 2250 hours of instruction.

To some this may seem like a rapid rise in requirements but we must remember that this rise was necessary to bring us up with the head of the procession which had started marching in other states years ago. New Jersey, lying between two progressive states, as far as education is concerned, was in danger of becoming the dumping ground for those who were unfit to practice pharmacy in New York and Pennsylvania. Our Board of Pharmacy deserves great credit for its courage in taking a firm stand for better training for pharmacists in spite of some ill-advised opposition.

It is plain to anyone who looks into the matter that the gateway to pharmacy in New Jersey under our present regulations is the College of Pharmacy. One must be a graduate to qualify for the examination for registration and one must have completed at least one year of college work successfully to qualify for the assistant examination. Without particularly seeking the responsibility of selecting our future pharmacists, the colleges have suddenly had that responsibility thrust upon them. Now the members of the New Jersey Pharmaceutical Association should be interested in how the colleges are meeting that responsibility. If they are admitting any applicant who has a high school diploma and the price of tuition, until their class rooms and laboratories are filled, then they are not meeting the responsibility at all. If they are requiring character endorsements and are shutting their doors to undesirables, regardless of the effect on the treasury, they *are* meeting that responsibility. The members of a profession who have its interests at heart ought to know what is being done to keep out undesirables and they ought to coöperate with those charged with that duty. To my knowledge this Association

has never made it its business to find out what is being done or to coöperate along this line.

The largest number of prospective New Jersey pharmacists receive their training in three colleges. Those from the southern part of the state find it most convenient to attend the Philadelphia College of Pharmacy and Science. Many in northern New Jersey and other easy commuting points attend the New York College of Pharmacy. The majority since 1920 are attending the New Jersey College of Pharmacy in Newark. Available records for the past year show a registration of about fifty-five New Jersey students in all courses at the New York College, 65 from New Jersey at the Philadelphia College; about two hundred Jerseymen out of the total enrollment of two hundred and fifty at the New Jersey College.

So many of the older members of the New Jersey Association are alumni of the New York or Philadelphia Schools, that I dare say they are better acquainted with those institutions than with the College in their own state. I believe that a New Jersey pharmacist, no matter what his *Alma Mater* may be, owes some allegiance to the College in his own state. At least he should be sufficiently interested in it to want it to be successful.

It is well known that the Philadelphia College has expanded in recent years and is giving science courses as well as courses in pharmacy; that it has campaigned successfully for building and endowment funds and that it has adopted a careful system of selecting students.

It is also well known that the New York College is affiliated with Columbia University; that it has recently enlarged its facilities and has added to its equipment with the aid of funds collected from alumni and other sources. This college is, as far as I know, the only one of the New York Schools which has arranged a three-year course that meets the requirements for New Jersey students even though its regular minimum course for the coming year (and perhaps for several more) is only a two-year course as required in New York State. Anyone familiar with college administration knows that it is not a simple matter to make arrangements of this sort and the New York College deserves credit for its spirit of service.

It is further well known that the New Jersey College of Pharmacy is engaged in building and financing a new structure to house its increasing number of students and prepare for the adequate administration of the three-year course. I am sure you will pardon me if I spend a few moments in acquainting you with some things I think you ought to know about the only school of pharmacy in your own state and perhaps endeavor to arouse your interest in its welfare.

When the New York and Philadelphia schools had already reached or neared the proverbial three-score and ten, the New Jersey College was a babe in arms. It was organized in 1892 on a basis very similar to the Philadelphia and New York Schools. The college membership has never grown like that of the other institutions mentioned but this was perhaps due rather to a lack of applicants for membership than to a desire to restrict it. In the past year a number of new members have been added making the total about twenty-six.

One often hears misinformed individuals referring to the New Jersey College as the property of a wholesale drug house, as a stock company, or belonging to the State of New Jersey or to the druggists of New Jersey. None of these statements

are true. The College was organized under an act of the legislature which empowered its Board of Trustees to give courses in pharmacy, award the Ph.G. degree and work for the improvement of knowledge in pharmacy and allied sciences. It is an independent school of the non-profit making type. Salaries are paid to faculty and certain officers and small honoraria are given for the performance of certain duties but no one receives any dividends from the institution nor does any individual own its property. Its property like that of many other universities and colleges is held for educational purposes under the administration of the Trustees. This statement is based on public records open to any one who may take the trouble to look them up.

Many prominent members of this Association have been affiliated with the college of pharmacy. The names of Kuebler, Hommell, Staehle, Wuensch, Wrensch Marquier and others are linked with the progress of both.

Just why the New Jersey Pharmaceutical Association has never had a committee on education and taken a greater interest in the New Jersey College of Pharmacy is not apparent to the author of this paper. Other State Associations take pride in the institutions of their state and lend moral and material support to their welfare. We have overlooked this duty and it seems timely to correct the oversight. The growth of the college in numbers of students since 1920 has been rapid. The total number of graduates from the institution in thirty-three years is 761. Of these, 279, or about 37%, have been graduated since 1921. Graduates of the college since 1923 are eligible to the New York, Pennsylvania and other State Board examinations. The College is certainly filling an educational need but in order to continue to do so in conformity with the higher requirements of the Pharmacy Boards in this and neighboring states, it must have more space, more equipment, more professors and full-time assistants.

Efforts to provide these necessities are under way but are handicapped by lack of funds. That is not an unusual situation with colleges but it is a serious one.

When a college is compelled to spend all the money it has and can borrow, for building purposes, its equipment and faculty must suffer. If all available funds are spent for faculty and equipment, the building must suffer. All three are of prime importance and none should suffer. The remedy lies in endowment, state support or contributions to meet particular needs.

If some philanthropist would endow the New Jersey College, as the Massachusetts College has been endowed, the problem of pharmaceutical education in New Jersey would be solved forever. If the legislature of the State of New Jersey, representing the people, were to make a lump sum contribution for the building and an annual contribution for maintenance of the College of Pharmacy, the problem would likewise be solved. There is plenty of precedent for such action. At its last session the legislature voted $200,000 for a physics building at Rutgers University. Annual contributions are made to the same institution. Unfortunately pharmacy is not taught at the University so pharmacists cannot benefit from these contributions. It is conceivable, however, that the College of Pharmacy might become a part of the State University System and benefit indirectly by these appropriations.

If the College had a large alumni body of wealthy men, it might be able to secure the necessary sums from them. The difficulty is that funds from all such

sources are not in sight and unless there is concerted effort on the part of all those interested in pharmaceutical education in this state to bring about endowment, state aid, or financial help of some kind, the College will for years to come stagger under the load of debt that must be incurred, curtail necessary improvements, take in all applicants for admission it can possibly accommodate, without regard to their fitness for pharmacy—all in the hope of coming out a little ahead financially each year, to pay off mortgages and other debts.

A business may thrive under such conditions but an educational institution will do so only at the expense of students and faculty. We must not compare the work of making dollars with the work of building men who are to determine the future character of our profession.

We have briefly traced the origin and need for college training in pharmacy. We have considered the types of colleges giving instruction in pharmacy. We have discussed the college requirements in this state and referred to the three colleges which now furnish over 90% of the future New Jersey pharmacists. It has been pointed out that the colleges are the gateway to pharmacy in this state and attention has been directed to the needs of the College of Pharmacy within your own borders.

All educational work which will benefit our calling is deserving of our support but that which lies nearest should have our first consideration. Can we afford to ignore it?

RHO CHI—HONORARY PHARMACEUTICAL SOCIETY.

BY ZADA M. COOPER.

It is, perhaps, worth while to think occasionally of the significance of honorary societies. To be specific, let us think of Rho Chi, honorary pharmaceutical society. There are at least four good reasons for its existence—it is a means of recognizing superior scholarship; it establishes fraternal relations among the scholarly members of all colleges represented; it is an incentive to excel for the sake of obtaining the honor; it will help to promote the science and the art of pharmacy. The custom of recognizing in some way the individual who outranks his fellows goes far back in history and has taken many forms. Honorary societies, as one only of these forms, have grown in numbers and in strength since Phi Beta Kappa was established until every calling is represented by such a society. Rho Chi is comparatively young but it is making a place for itself. Election to membership is in some ways the highest honor within the gift of college organizations. The young men and women who go to colleges of pharmacy *should* be doing so in order to fit themselves for life. I say *should* advisedly because some go only to pass a Board examination and "get registered" but they may be left out of the reckoning where honors are concerned. The work involves the study of some things for the training of minds and bodies and of others that constitute a specialized body of facts and theories. So when a student shows proficiency in scholarship it indicates, in general, that he has done well the thing that he came to college to do. Recognition of that scholarship is then a real honor. Membership in an honorary society brings a more intimate association with others who have won the same honor. The

insignia of any fraternal organization is an introduction to another wearing the same insignia. The wearer of a fraternity pin feels even a closer bond, and a key that at once is recognized as the emblem of an honorary society has a peculiar significance. The time is coming when our key will be much in evidence at state and national gatherings of pharmacists. The men and women who are to be the leaders in pharmaceutical progress in the years ahead will many of them be members of Rho Chi. The possibility of winning this honor is proving an incentive to hard work. No one pretends to say that it will make every college boy and girl study. The millennium is not here and every teacher knows that nothing will stir ambition in some folks. On the other hand teachers where chapters of Rho Chi exist do see that some people are working harder than they otherwise would. Students themselves do not hesitate to say that they want to win the honor. All these three purposes indirectly will make for the advancement of pharmacy. Some of us, perhaps all of us, have visions of some things that the society can do, when it is bigger and stronger, that will have a very direct bearing on the science and the art of pharmacy.

Freshmen students are not only being told about Rho Chi soon after their registration but prizes are being offered to encourage them to study. Alpha Chapter gives ten dollars to the freshman making the highest grade in a competitive examination held the latter part of the school year. The prize this year was awarded to Oliver J. Weinkauff. Delta Chapter gives a prize of twenty dollars to the freshman student ranking highest, all first-year subjects being considered. The prize this year was awarded to Miss Helena Bunge of Avoca, Iowa. Epsilon Chapter also gives a prize of ten dollars to the highest ranking freshman.

Four honorary members were elected during the last year; Dr. Charles W. Johnson, Dean of the College of Pharmacy, University of Washington, Seattle; Frank S. Ward, Secretary of the Oregon State Board of Pharmacy, Portland; Dr. P. H. Dirstine, Dean of the School of Pharmacy, State College of Washington, Pullman; Dr. Emil L. Boerner, former Dean, now Professor Emeritus, College of Pharmacy, State University of Iowa, Iowa City.

Rho Chi now has seven chapters, four having been added since it was incorporated as a national organization in 1921. These chapters are all located in colleges that are members of the American Conference of Pharmaceutical Faculties. In fact, the By-Laws provide that chapters may be established only in colleges that are members in good standing of the Conference.

Election to membership is on a scholarship basis alone and there can be no question about this scholarship because students must be recommended by the Deans of the Colleges after a careful summing up of all points earned.

The National officers are: *President*, H. W. Valteich, New York, N. Y.; *Vice-President*, G. Carl Tasker, Pittsburgh, Pa.; *Secretary*, E. J. Traut, Battle Creek, Mich.; *Treasurer*, Miss Helen Anderson, Detroit, Michigan.

Alpha Chapter at the University of Michigan initiated five new members in June.

Beta Chapter at the State College of Oregon has the following officers: *President*, Lewis Britt and *Vice-President*, Edward Dunn, both of Corvallis; *Secretary-Treasurer*, Alfred Illge, Portland. Ten new members were elected this year, besides the officers just named.

Gamma Chapter is located at the University of Oklahoma and the officers are: *President*, H. A. Shoemaker; *Vice-President*, F. R. Hood; *Secretary*, Alma J. Neill; *Treasurer*, J. Scott Price.

Delta Chapter, located at the State University of Iowa, has the following officers: *President*,

Joseph J. Pfiffner, Iowa City; *Vice-President*, Charles F. Lowry, Cresco; *Secretary-Treasurer*, Neoma Kistenmacher, Davenport. Seven new members were elected this year; other honors came to some of these men—recommendation to membership and one year's dues in the AMERICAN PHARMACEUTICAL ASSOCIATION were won by Mr. Boughton for ranking highest in organic chemistry; by Mr. Nielsen for the highest standing in practical pharmacy, and by Mr. Montgomery for the highest rank in recognition and description of organic drugs. Mr. Toalson won the last-mentioned prize last year. Mr. Montgomery also ranked highest in structural botany and was awarded a set of Britton and Brown's Illustrated Flora.

The officers of Epsilon chapter, which was installed during the year at the State College of Washington, are: *President*, F. Burmaster, Pullman; *Vice-President*, Ronald V. Robertson, Spokane; *Secretary-Treasurer*, C. M. Nickerson, La Conner. There are eight other charter members.

Zeta Chapter was recently installed at Alabama Polytechnic Institute, with the following officers: *President*, C. T. Burkhart, Hanceville; *Vice-President*, L. T. Agee, Lamison; *Secretary-Treasurer*, C. C. Belcher, Brent. There were five additional Charter members.

The latest group to be granted a charter is at the University of Wisconsin. This will be Eta Chapter and officers have not yet been elected.

NATIONAL CONFERENCE ON PHARMACEUTICAL RESEARCH.

RESEARCH INFORMATION JULY 1925.

The fourth annual meeting of the National Conference on Pharmaceutical Research will be held at Fort Des Moines Hotel, Des Moines, Iowa, on Saturday, August 22, 1925.

There will be two sessions; one beginning at 10 A.M. and the other at 2 P.M.

The tentative program is as follows:

1. Roll Call
2. Reports of Officers
3. Reports of the 10 Standing Committees
4. Reports from delegates from the affiliated organizations; *viz:*
   - (*a*) Association of Official Agricultural Chemists
   - (*b*) American Chemical Society, Division of Chemistry of Medicinal Products
   - (*c*) American Conference of Pharmaceutical Faculties
   - (*d*) American Drug Manufacturers' Association
   - (*e*) AMERICAN PHARMACEUTICAL ASSOCIATION
   - (*f*) American Pharmaceutical Manufacturers' Association.
   - (*g*) Bureau of Chemistry, U. S. Department of Agriculture
   - (*h*) Joint Committee on Definitions and Standards of Food and Drugs
   - (*i*) National Association of Boards of Pharmacy
   - (*j*) National Association of Retail Druggists
   - (*k*) National Formulary Revision Committee
   - (*l*) Pharmaceutical Laboratory Seminar
   - (*m*) Plant Science Seminar
   - (*n*) Proprietary Association
   - (*o*) U. S. P. Revision Committee
5. General discussion on:
   - (*a*) Census of Research
   - (*b*) Graduate students in pharmacy and their research work
   - (*c*) Research topics.
6. New Business
7. Election
8. Adjournment

A large attendance is confidently expected.

H. V. ARNY, *Chairman.*

115 West 68th St., New York, N. Y. July 21, 1925.

THE DEPARTMENT OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES

WHAT IS THE MATTER WITH PHARMACY?*

BY FREDERICK J. WULLING.

The question embodying the title of this brief paper is being frequently asked. Many diverse answers have been given. Obviously they cannot all be correct. This paper is my humble contribution to the solution of the problem.

News dispatches bring the information that Johns Hopkins proposes to abandon its undergraduate courses and to discontinue the granting of the bachelor's degree, in order to devote its facilities and resources to graduate and research work.

It is reported that the University of Chicago "contemplates the establishment of extraordinary professorships carrying salaries of $10,000 a year and open only to men of distinction who shall devote themselves to research and do a minimum of teaching."

Simon Guggenheim, in creating his three million dollar educational foundation, noted that "the educational system of Europe is superior to ours in the fact that it offers greater opportunities for young men and women to pursue lives of productive scholarship."

Dr. William Watts Folwell, President Emeritus of the University of Minnesota, many years ago advocated the establishment of junior colleges preferably in connection with and following high school, so that the universities might be free to devote themselves to advanced professional or specialized study and research. A number of junior colleges already are in operation. Their work, in a general way, covers the first two years of the average arts college course following high-school graduation. The creation of these junior colleges is no doubt the entering wedge toward the differentiation of the college, in the academic sense, from the university. Our universities are made up of numbers of colleges representing the various fields of learning. Nearly all of the colleges provide opportunities for graduate and research work. The administration covering this latter work is usually vested in a graduate school operating under rules applicable equally and collectively to all of the colleges. By graduate work is meant higher work following the completion of the undergraduate course. In that sense there is now only one undergraduate course, namely: the course of the general or academic college. Courses in medicine, pharmacy, dentistry, law, education, commerce, etc., are not graduate courses, except as they follow the completion of the college undergraduate course which is already the requirement in a very few of our universities. They are specialization courses, based either not at all, or only partly, and in only a few universities wholly upon the completion of the college undergraduate course. No doubt the time will come when they will be based fully upon the college undergraduate course.

Some professions, in their educational aspects, already have made respectable progress toward that goal. The best grades of medical, law, education, business

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* Read at the joint meeting of the Northwestern Branch, A. PH. A., and the Scientific and Practical Section of Minnesota State Pharmaceutical Association, February 11, 1925.

schools, which only a comparatively few years ago required no prerequisites beyond the high school and in most cases demanded no preliminary educational standards at all, now require for entrance the completion of the junior college course, including certain subjects within the curriculum.

Only a few decades ago, all who were eligible for entrance upon the pharmacy courses were eligible for medicine, dentistry, law, etc., because there were practically no entrance requirements at all, at least not any really respectable ones in the light of those of to-day. Pharmacy students in those days were the equal of students in other professions as far as capacity and standing were concerned and similarly the professional pharmacists were on a par with the doctors and lawyers and ahead of the dentists in professional attainment and in the estimation of the public. Not so to-day. Why? The answer is obvious. Pharmacy did not advance its entrance requirements in the same degree as other professions did. As a result the best student material ceased going into pharmacy, at least in a large measure, with the consequent gradual lowering of professional ideals and a deterioration of loyalty to the altruistic aims and purposes of the profession. A few pharmacists, mostly though not exclusively educators, realized the remedy lay in advancing educational standards. The AMERICAN PHARMACEUTICAL ASSOCIATION and later the American Conference of Pharmaceutical Faculties attacked the problem with the right remedy in mind, but with so little substantial support from the profession that only little progress has been made.

Some refer, in a boasting way, to the fact that the Conference colleges are now on a high-school graduation basis and soon will be on a minimum three-year professional course basis. That is nothing to boast about; in the light of the educational advancements made by other professions, it is something for our profession to be ashamed of. While it may be said truthfully that some of the Conference colleges have been indifferent and even hostile to advancing standards, the blame must be borne by the calling at large for not demanding and forcing adequate advancement. Why has the calling as a whole failed so completely to see its advantage? Because its composite intelligence is based upon antecedent education and training, of which there was not enough, nor was it generally of the right kind. In education I include devotion to ideals, a fair measure of refinement and culture and good taste, and even a little pride in right and adequate standards and conduct and affiliations. Those qualities are products more generally of academic courses than of professional, though some who have no education at all may possess them inherently. Those who possess them live life more fully and affirmatively and certainly have the advantage of those who lack them entirely or in degree. Why should not pharmacy enjoy its fullest advantages? I cannot think of a reason unless it be that it fails to recognize them. The practitional responsibility of pharmacy is second only to that of medicine. Pharmacy accepts that responsibility foolishly, if it does not carry sufficient educational liability insurance, as it now does not.

Based upon the responsibility involved in its practice, pharmacy is certainly justified in placing itself on an unquestioned par with other professions. To do so it should procrastinate no longer but forthwith require completion of a junior college course and four years of professional pharmaceutical work as entrance prerequisites to the calling. Facilities for graduate work and research should be

created in a large measure and should be of the real university grade. If henceforth all incoming practitioners will have completed a junior college course of two years and a pharmacy (specialization) course of four years, the professional standards and atmosphere of pharmacy thus engendered will be incompatible with everything that is not conducive to professional virtue and dignity, and no more will the question be asked, "What is the matter with Pharmacy?"

PROGRAM FOR THE TWENTY-SIXTH ANNUAL MEETING, OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES, FT. DES MOINES HOTEL, DES MOINES, IOWA, AUGUST 24-25, 1925.

Monday, August 24, 8:30 A.M.
First Meeting of Executive Committee.

Monday, August 24, 9:30 A.M.
Teachers' Conferences
(*a*) Teachers of Pharmacy, E. F. Cook, Chairman.
(*b*) Teachers of Materia Medica (including Botany, Physiology and Pharmacology.) R. A. Lyman, Chairman.
(*c*) Teachers of Chemistry, C. B. Jordan, Chairman.

Monday, August 24, 2:00 P.M.
Teachers' Conferences. (Same as above.)

First Session of Conference—Monday, August 24, 3:30 P.M.
Roll Call
President's Address, W. H. Zeigler.
Report of Secretary-Treasurer, Zada M. Cooper.
Appointment of Nominating Committee.
Paper—"Some Views on Minimum Three Year Course"—T. J. Bradley.
Paper—"The Necessity and Opportunity for Schools of Pharmacy for Negro Youth"—Dr. J. J. Mullowney.
Report of Executive Committee, C. B. Jordan.
Consideration of Revised Constitution and By-Laws.
Adjournment.

Second Session—Monday, August 24, 8:00 P.M.
Reports of Standing Committees.
1. Higher Educational Standards—D. B. R. Johnson.
2. Curriculum and Teaching Methods—W. J. Teeters.
3. Activities of Students' Alumni—E. L. Newcomb.
4. Relation of Pharmacy Schools and Other Professional Schools—W. F. Rudd.

Address—"College Placement Examinations"—Dr. George L. Stoddard, University of Iowa.
5. Committee on Research—Albert Schneider
6. Distribution of Information Concerning Prerequisite Legislation—W. B. Day.
7. Investigation of Pharmacy Schools by Carnegie Foundation—Edward H. Kraus.

Adjournment.
Second Meeting of Executive Committee.

Tuesday, August 25th, 2:00 P.M.
Report of Special Committees.
(*a*) To Study Pharmaceutical Education from the Functional Standpoint—J. A. Koch.
(*b*) To Coöperate with Executive Committee Relative to Use of Term Pharmacist by Civil Service Commission—Edward Kremers.

(*c*) To Study Evaluation of Credit Hour—W. F. Sudro.
(*d*) To Confer with N. A. B. P. and A. PH. A. about Winter Meetings—T. J. Bradley.
(*e*) To Prepare a Memorial on the Death of Dr. Kraemer—E. L. Newcomb.

Reports of Representatives to Other Organizations.
Unfinished Business.
Miscellaneous Business.
Election of Officers and Elective Members of Committees.
New Business.
Executive Session and Election of New Members.
Final Adjournment.

COMMITTEE REPORTS

REPORT OF THE COMMITTEE ON PATENTS AND TRADEMARKS.*

BY F. E. STEWART, CHAIRMAN.

To the AMERICAN PHARMACEUTICAL ASSOCIATION:

Your Committee on Patents and Trademarks labors under the disadvantage of having no lawyers in the membership or any other person sufficiently acquainted with the subject to sign the reports. Consequently, the committee has practically been from the beginning of its career a "one man committee."

On the other hand it has been to the advantage of the Association that the chairman has been in constant contact with leading patent and trademark lawyers through business and social connections whose aid in the work of the committee has been given freely and without expense to the A. PH. A.

As an American pharmaceutical association we are vitally interested in patents and trademarks in their relation to the practice of pharmacy. Probably no subject influencing the vocation of the pharmacist, pharmaceutical chemist, and medicine manufacturer, is so little understood. In the first place these vocations differ from all other vocations because of their relation to the medical profession and the public health, so that certain misinterpretations and misapplications of the patent and trademark laws by the Patent Office, patent lawyers, and the lower courts, which unfavorably influence other vocations become a menace to the public health when applied to the vocation of the pharmacist and medicine manufacturer. This is very apparent when the subject of introducing new remedies to the medical profession and the public at large by advertising is considered.

What the physicians and the public must know about alleged new remedies to use them aright for the prevention of disease, the relief of suffering, and the healing of the sick is the truth regarding their properties as remedial agents. This information is not to be found in advertisements as a rule. Advertisements are written to sell the goods. Exaggeration is quite generally employed by merchants and manufacturers in every line who use advertising as a method for creating demand. This works more or less injury to the purchaser who is misled by it, but the harm may not be serious except in cases where the health is at stake. In such cases loss of life may result.

It has been truly said that tens of thousands of alleged new remedies have been introduced by advertising during the past thirty or forty years and not more than one tenth of one per cent of them have proved to be of any special value as therapeutic agents. Thirty years ago there were about three thousand drug items listed and now there are more than forty-five thousand according to one of the chemical journals. This means thousands of useless experiments on the sick by doctors who were induced to use these products in their practice, and thousands of more failures in the use of them for domestic practice.

The so-called new remedy business is protected and fostered by patents and the registering of the names of these alleged inventions and discoveries in medicine. The object of the patent law according to the provision for such law contained in the Constitution of the United States is to promote progress in science and useful arts by protecting inventors for limited times in the

* Buffalo meeting, 1924.

exclusive manufacture and sale of their inventions. To be patentable the invention must be new and useful. Mere aggregations of old- and well-known drugs marketed under invented or coined names are not new and useful inventions in the meaning of the patent law. Such alleged inventions have been patented now and then because the Patent Office is not provided with means for determining the truthfulness of the claims of those applying for patent. But, as a rule, these "new remedies" have been protected by registering their currently used names as trademarks.

The chairman recently had the privilege of traveling across the ocean on the same ship with three eminent patent and trademark lawyers—an ex-commissioner of patents, the son of another ex-commissioner, and the head of the New York branch of a well-known Philadelphia law firm specializing in patent and trademark law. The following points were brought out in conversation:

Can property be created in the names of articles of trade by registering them as trademarks in the Patent Office at Washington? To this question the ex-commissioner replied as follows:

"The registering of a name as a trademark does not make a trademark out of it. Property in trademarks cannot be created by registration. The trademark law is a law for *registering* trademarks not a law for *creating* trademarks." The only way whereby property can be created in trademarks is by *adoption* and *use*. The name of the article itself cannot perform the function of a "trademark." The name "salt" cannot be a trademark on salt, nor "sugar" on sugar. The name of the article itself must also appear on the label as well as the name claimed as a trademark, as, for example, the name "Eagle" as a distinguishing mark to point out the brand of condensed milk made by a certain well-known producer.

CITATIONS OF EVIDENCE IN PROOF OF THE CORRECTNESS OF THE EX-COMMISSIONER'S REPLY.

The following quotation from the Report of the Commission Appointed to Revise the Statutes relating to Patents, Trade Names, etc., under Act of Congress Approved June 4, 1898, throws light on the subject:

"Criminal prosecutions having been made under the statutes of 1870 and 1876, in the southern district of New York and the southern district of Ohio, and a difference of opinion having been certified in the Supreme Court on the question whether these Acts of Congress on the subject of trademarks were founded upon any rightful authority in the Constitution of the United States, the cases came before the court for review at the October term of 1879. (Trademark Cases, 100 U. S., 82.) The court showed with admirable clearness that because of the distinction between patents and copyrights and trademarks, pointed out in the decision, the power of Congress to enact the law could not be derived from that paragraph which relates to authors and inventors, since the right of ownership in trademarks is created by *adoption* and not by authorship or invention."

It is very clear, therefore, that names cannot be copyrighted nor patented. However, names can be *adopted* as trademarks. But to become trademarks such names must be *used* as trademarks and not used as the names of the articles themselves nor advertised as such, otherwise they are not trademarks, but *appellatives*. In other words, they must be used as "bonafide trademarks" and not as generic or descriptive names. Now let us see what the United States Supreme Court has decided in that regard. The following quotation from the Official Gazette of the United States Patent Office, 1872, page 28, will tell us:

"The Supreme Court of the United States, in President, etc., of the Delaware and Hudson Canal Company vs. Clark, repeated a proposition that as a rule has been frequently enunciated and settled beyond question, *viz.*, the office of a trademark is to point out distinctively the origin or ownership of the article to which it is affixed, or, in other words, to give notice who was the producer."

It is claimed by the advocates of the so-called "natural right doctrine" that the inventor of a new invention, or the commercial introducer of a new article of commerce, whether an invention or not, acquires by such introduction the exclusive right to its manufacturer and sale; that property is created in the article itself by the investment of capital in advertising and building up a business in it; that the property thus created includes the ownership of the name of the article as a trademark; therefore, as the commercial introducer owns the right to make and sell the article exclusively, and also owns the name of the article as his trademark, it logically follows that the decision of the Supreme Court just cited was intended to recognize and protect this right, and

therefore, as the first commercial introducer has, by natural right and common law, the exclusive right to make and sell the article, the name of the article is a legitimate trademark and "points out distinctively the origin or ownership of the article to which it is affixed, or, in other words, gives notice who was the producer."

The fallacy of this reasoning becomes at once apparent when we refer to 13 Wall, 323, for we find that the Supreme Court went on to say:

"No one can claim protection for the exclusive use of a trademark or tradename which would practically give him a monopoly of the sale of any goods other than those produced or made by himself. If he could, the public would be injured rather than protected, for competition would be destroyed. Nor can a generic name or a name merely descriptive of an article of trade, or of its qualities, ingredients, or characteristics, be employed as a trademark, and the exclusive use of it entitled to protection."

Standard Remedies, a journal "published in the interest of the manufacturers of and jobbers in proprietary medicines, cosmetics, etc.," in its issue for December, 1915, contains the following quotations in connection with a warning to the manufacturers not to "jeopardize their trademark rights" by complying with the requirements relating to compulsory registration of formulas with the New York Board of Health contained in the "Goldwater Ordinance" until compelled to do so:

"The name of a secret or proprietary preparation is descriptive, and hence is not a valid trademark. Any one who discovers the secret and makes the goods according to the formula may use the name to describe the goods. A contrary view has been expressed, and such names declared to be valid trademarks, but such cases must be deemed instances of unfair competition. Of course the name may not be used to pass off spurious concoctions as and for the genuine preparations. Cyc. 38–740.

"The name of a secret and proprietary preparation will be protected against unauthorized use or imitation as the name of some other different preparation of like kind sold in competition, but not made in accordance with the formula of the original and genuine article, even though the labels and wrappers are entirely different, because such a use is necessarily false and deceptive. Cyc. 38–835.

"But such names are generally descriptive and therefore may be used by anyone who discovers and knows the secret of the composition of the article and makes his own article according to the original formula. If such is the truth a subsequent user of the name must add some distinguishing statement showing that the article is his own production of the article known by that name and he must not imitate the dress or the makeup of the goods in addition to using the name, or do any affirmative act calculated to deceive the public and pass off the goods as and for the previously known goods. Cyc. 38–835."

The correctness of the statements made in these quotations taken from the organ of the so-called "proprietary" trade is clearly demonstrated by the decision of the Federal District Court, an appanage of the Supreme Court of the United States in the Coco-Quinine Case (William R. Warner & Company, Petitioner vs. Eli Lilly & Company. On Writ of Certiorari to the United Stated Circuit Court of Appeals for the Third Circuit (June 9, 1924). This suit was brought in the Federal District Court for the Eastern District of Pennsylvania by respondent to enjoin petitioner from continuing to manufacture and sell the preparation if flavored or colored with chocolate; and also from using the name Quin-Coco, on the ground that it was an infringment of the name Coco-Quinine, to the use of which respondent had acquired an exclusive right. The District Court decided against the respondent upon both grounds. 268 Fed. Rep. 156. On appeal the Court of Appeals ruled with the District Court upon the issue of infringment but reversed the decree upon that of unfair competition. 275 Fed. Rep. 752. The Federal Court said:

"First. We agree with the courts below that the charge of infringment was not sustained. The name Coco-Quinine is descriptive of the ingredients which enter into the preparation. The same is equally true of the name Quin-Coco. A name which is merely descriptive of the ingredients, qualities or characteristics of an article of trade cannot be appropriated as a trademark and the exclusive use of it afforded protection. The use of a similar name by another to truthfully describe his own product does not constitute a legal or moral wrong, even if its effect be to cause the public to mistake the origin or ownership of the product. Canal Co. vs. Clark, 13 Wall,

311, 323, 327; Standard Paint Co. vs. Trinidad Asphalt Co., 220 U. S. 446, 453; Howe Scale Co. vs. Wyckoff, Seamans and Benedict, 198 U. S. 118, 140."

"The name of a secret preparation may be used by anyone for goods actually prepared according to the recipe, for they are the goods indicated by the name, whether prepared by the original inventor of the recipe, or his successors in business, or not. Until the secret is discovered or betrayed the goods of the original inventor of the recipe or his successors can be the only goods to which the name is applicable, or which are denoted by it, but when other people can make them, the difficult question of fact arises, whether the name is merely that of the goods themselves, or that of the goods of the kind prepared or sold by the original inventor or his successors in business. This was well put by Frey, J., in the Angostura Bitters Case (Seigert *vs.* Findlater, 7 C. D., p. 813):

" 'I cannot say,' the learned judge said, 'that Meinhard may not, if he can, make a bitter identical with the plaintiff's, and if he does, I cannot prevent him from selling it as Angostura Bitters.'

"It is to be observed that the person who produces a new article, and is the sole maker of it, has the greatest difficulty (if it is not an impossibility) in claiming the name of that article as his own, because until somebody else produces the same article, there is nothing to distinguish it from. No distinction can arise from using the name of the class, so long as the class consists of only one species, for then the name of the species and of the class will be the same." (The Law of Trademarks, by D. M. Kerly, M.A., LL.B., published by Sweet & Maxwell, 1894.)

The United States Supreme Court, in the Singer Sewing case, 1895, pointed out with great clearness the illegality of the so-called "proprietary" system in relation to the registration of generic and descriptive names as trademarks, and more specifically referred to the attempt to perpetuate monopolies obtained by patent after the expiration of patents by the commercial control thus obtained over the currently used names of articles of commerce, in its decision, which reads as follows:

"The result, then, of the American, the English, and the French doctrine universally upheld is this, that where, during the life of a monopoly created by a patent, a name, whether it be arbitrary or be that of the inventor, has become, by his consent, either express or tacit, the identifying and generic name of the thing patented, this name passes to the public with the cessation of the monopoly which the patent created. Where another avails himself of this public dedication to make the machine and use the generic designation, he can do so in all forms, by referring to it in advertisements and by other means, subject, however, to the condition that the name must be so used as not to deprive others of their rights or to deceive the public, and therefore that the name must be accompanied with such indications that the thing manufactured is the work of the one making it, as will unmistakedly inform the public of the fact."

This decision of the Supreme Court has been criticized as inciting to unfair competition in trade by the advocates of the doctrine of "natural right" to inventions which also includes the exclusive ownership of the right to manufacture and sell every and any new article of commerce by the first commercial introducer. The above citations may prove of value in clarifying the minds of such individuals upon this important subject, and also be of service as a warning to those who are tempted to appropriate the business of competitors by unfair methods of advertising and publicity:

"An inventor has no right to his invention at common law. He has no right of property in it originally. The right which he derives (by patent) is a creature of the statute and of grant and is subject to certain conditions incorporated in the statutes and in the grants. If to-day you should invent an art, a process, or a machine, you have no right at common law, nor any absolute natural right, to hold that for seven, ten, fourteen, or any given number of years, against one who should invent it to-morrow, without any knowledge of your invention, and thus cut me and everybody else off from the right to do to-morrow what you have done to-day. There is no absolute or natural right at common law, that I, being the original and first inventor to-day, have to prevent you and everybody else from inventing and using to-morrow or next day the same thing. (Am. H. & L. S. Mach. Co. *vs.* Am. Tool & Mach. Co., 4 Fisher's Pat. Cases, 294. Simonds Manual of Pat. Law, p. 9.)"

OBJECT OF PATENT LAWS.

Clause 8, Section VIII, Article I, of the Constitution of the United States gives Congress

the power "To promote the progress of science and useful arts, by securing, for limited times, to authors and inventors the exclusive right to their respective writings and discoveries," and there is no other clause in the Constitution providing for the granting of monopolistic privileges.

As above pointed out, the object of the patent law is to promote progress in science and useful arts. This is accomplished by providing that each application for patent shall be in effect a complete scientific monograph filed in the Patent Office for convenient reference. Copies of such applications may be obtained from the Patent Office by mail by sending five cents to the Office with a request of the same giving the name of the invention, number of the patent, and date thereof. The Fathers of the United States Constitution, in providing for the patent system, had in mind the establishment of a great National Bureau for the Promotion of Progress in Science and Useful Arts and thus advancing civilization. As stated by Terrill in his treatise on patent laws:

"The theory upon which these laws rest is that it is to the interest of the community that persons should be induced to devote their time, energies, and resources to original investigation for the furtherance of science, the arts, and manufactures. This was recognized from the earliest periods which can pretend to be described as civilized. It is to the advantage of the whole community that authors and inventors should be rewarded, and no measure of reward can be conceived more just and equitable and bearing a closer relation to the benefit conferred by the particular individual than to grant him the sole right to his writing or discovery for a limited period of time."

The patent law enacts:

"That, before any inventor or discoverer shall receive a patent for his invention or discovery, he shall make application therefor to the Commissioner, and shall file in the Patent Office a written description of the same, and of the manner and process of making, constructing, compounding, and using it, in such full, clear, concise, and exact terms, as to enable any person skilled in the art or science to which it appertains, or with which it is most nearly connected, to make, construct, compound, and use the same; and, in case of a machine, he shall explain the principle thereof, and the best mode in which he has contemplated applying that principle, so as to distinguish it from other inventions; and he shall particularly point out and distinctly claim the part, improvement, or combination, which he claims as his invention or discovery; and said specification and claim shall be signed by the inventor and attested by two witnesses."

A PLAN FOR DEFEATING THE OBJECT OF THE PATENT LAW BY CREATING INTERNATIONAL PROPERTY RIGHTS IN THE CURRENTLY USED NAMES OF ARTICLES OF COMMERCE.

In certain Latin countries, *i. e.*, Cuba, South American countries, property in word trademarks is created by registration. In other words, the name of an article of commerce when registered by a manufacturer as a trademark is recognized as such by law. American manufacturers who wish to avail themselves of this privilege are required to obtain prior registration of their alleged trademarks in the Patent Office at Washington. This proviso made it necessary for American manufacturers to prevail upon the Patent Office to change its rulings in regard to the registration of descriptive or generic names as trademarks so as to admit the registration of such names as trademarks. To accomplish this purpose the manufacturers and their lawyers succeeded in having a new trademark law enacted, namely, the trademark Act of March 19, 1920. The final object is to secure by so-called "convention" an agreement between the various countries interested whereby the names of all new articles of commerce become the property of the original commercial introducers. And, as trademarks do not expire by limitation like copyrights and patents, the monopolies created in the manufacture and sale of products under registered names becomes unlimited in duration. The names of such articles claimed by their commercial introducers as private property are known as "non-technical" trademarks to distinguish them from "common law" trademarks.

The object of the trademark Act of March 19, 1920, is set forth in the following paragraph quoted from the report of the Committee on Patents and Trademarks, read at the tenth annual meeting of the American Drug Manufacturers Association, New York City, April 11–14, 1921:

"In order to give those citizens doing business in the United States and who have been selling their goods under so-called non-technical trademarks, heretofore unregisterable in the United States, the opportunity of securing the benefits of this convention, the United States has

included in the Act of March 19, 1920, the provisions providing that these non-technical trademarks, which heretofore could not be registered, can be registered, if having been in bona fide use for one year in international commerce, or commerce with the Indian tribes. Briefly this provides for the registration of non-technical trademarks provided they have been used for one year. The Act of March 18, 1920, therefore opens the door whereby Americans can register non-technical trademarks under the convention."

Furthermore, it is evident that if the so-called trademark system advocated by the manufacturers of secret and semi-secret compositions of matter, ready-made prescriptions, and patented and non-patented chemicals, and pharmaceutical preparations, by which they hope to establish perpetual and international monopolies by the ownership of the names of their commercially introduced articles of commerce, then we would have laws conflicting with one another, namely, a patent law whereby the inventors of new and useful inventions are granted monopolies in their manufacture and sale for limited times in exchange for the publication of full knowledge of their inventions for the promotion of progress in science and useful arts, and a trademark system whereby the inventors of nothing but names are permitted to enjoy monopolistic privileges far more restrictive than inventors of arts, machines, manufacturers, and compositions of matter of the greatest value to the world can obtain by patenting them.

The constitutionality of the U. S. Trademark Law of March 19, 1920, has been called in question for reasons that become apparent in the light of the above citations.

THE UNITED STATES PATENT AND TRADEMARK LAWS IN RELATION TO THE UNITED STATES PHARMACOPŒIA.

The Ninth Decennial Pharmacopœial Convention recommended "that the Committee of Revision be authorized to admit into the Pharmacopœia any medicinal substance of known origin, but no substance or combination of substances shall be introduced if the composition or mode of manufacture thereof be kept secret, or if it be controlled by unlimited proprietary or patent rights and the list of substances should be carefully selected, with standards for identity and purity, as far as possible."

The question has been very properly asked, "What is to become of the Pharmacopœia and scientific pharmaco-therapeutic literature if the newer additions to the materia medica are, and are to become, the property of the commercial introducers together with their currently used names?"

THE POSTAL DEFICIT.

Postmaster General New has published figures for June which he says would indicate a deficit of something like $40,000,000 for the fiscal year and that the efforts of Congress to find more revenue through the postal increases have failed of the result aimed at.

The *Philadelphia Ledger* in commenting editorially says: "The conclusion is obvious that higher rates tend to diminish the volume of all classes of mail affected thereby, and thus the easy process of increasing the price of postage in order to increase postal earnings is exactly of the character of an increase of the taxation rate in order to get more revenue. The argument has all the surface plausibilities but does not work out in fact."

Hearings are being held in various cities on the new postal rates. It would seem, from various statements made at the hearing in Philadelphia, that the schedule has cut down the volume of mail matter affected by these rates, and also the business contributing thereto, as, for instance, the paper business, printing, etc., and further deduction might indicate that on account of this other trade is being curtailed. It would almost seem as though the advances have not only failed to produce much greater income, but to a greater extent, reduced sales in some important lines, and when one is affected it is reasonable to assume that the condition becomes more or less general. It would have been better if, in revising, the new rates had been given more study.

Senator George H. Moses said he was hopeful a schedule of rates would be worked out, inflexible for at least five years.

EDITORIAL NOTES

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THE DES MOINES MEETING, THE A. PH. A. HEADQUARTERS AND PHARMACY WEEK.

The *Practical Druggist* for July discusses the value of the A. PH. A. Headquarters in connection with Pharmacy Week. The editorial is timely, because both subjects will receive consideration at the Des Moines meeting during the last week of this month. The importance of this convention, because of action on the Headquarters Building and the beginning of greater A. PH. A. activities, should persuade every member, who can possibly do so, to attend—it represents service for pharmacy and the Association.

The editorial referred to follows:

"More special emphasis should be placed upon the drug and pharmaceutical side of the modern drug store. Public sentiment is created and opinion molded by what the eye sees and the ear hears. If the drug store does not reflect professional service, and drugs and medicines, the public will not long look upon it as a place where such service and supplies are a fundamental part of the business. The movement in favor of holding a Pharmacy Week is indeed an excellent one which it is hoped will lead to more intensive attention to pharmacy and drugs, in the displays in drug stores. Such propaganda work is very commendable; it will help pharmacy and it will help the public. With a great central headquarters building, work of this kind could be carried on continuously. Such work would be an efficient means of combatting the drugless drug store idea. It would help to inspire and sustain the confidence of medical men and nurses. It is an opportunity to show what pharmacy means to the world.

"The A. PH. A. has always been actively at work doing many things for the benefit of pharmacy as a whole. At the present time its greatest effort is toward the establishment of a great central headquarters building which may serve all of pharmacy. The success thus far attained on this project will stand for all time as one of the remarkable achievements of pharmacy.

"The successful completion and operation of the headquarters building will be of great benefit to everyone connected with pharmacy in any way. All who have not already done so should therefore subscribe now, and thus aid in finishing the project. We will then have an institution ready to do a lot of fine things that must be done for pharmacy and the retail druggist."

BULLETINS OF THE DRUG TRADE BUREAU OF PUBLIC INFORMATION.

Director Robert P. Fischelis has issued Bulletins C-30 to C-33, of the Drug Trade Bureau of Public Information.

Bulletin C-30 gives the figures of the aggregate retail drug trade, made public through the National Wholesale Druggists' Association. The total volume of the wholesale drug sales is estimated at $417,000,000. There are 292 wholesale drug firms, and more than 50,000 retailers. The total volume of sales in retail

drug stores of all kinds is roughly estimated at one and one-quarter billion dollars, and the average business of a retail drug store about $25,000 annually. The chain drug store business is estimated at over $200,000,000, averaging about $69,000.00 per store. From these figures it also appears that approximately 85% of the business done in drug stores is to be credited to the independently owned and operated retail drug stores. One of the surveys made by the Harvard Bureau of Business Research indicates that most retail druggists buy from two or three wholesalers from whom they obtain 60 to 65% of their requirements, the other items being purchased from dealers in the side-lines.

Bulletin C-31 releases a picture of the Remington Honor medalist, Dr. H. M. Whelpley, to the newspapers.

Bulletin C-32 gives publicity to the annual meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION to be held in Des Moines, Iowa, during the week beginning August 24.

Bulletin C-33 relates to the resolution adopted by the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION on the sale of alcoholics under the guise of medicines. Action of the Council will be found on page 551 of the June JOURNAL, and report thereon in the July number on page 640, and further reference in the same issue on page 578.

PROBLEMS OF THE PHARMACIST.

Pharmacist Ambrose Hunsberger, as delegate of the N. A. R. D. to the Massachusetts Pharmaceutical Association, discussed various problems confronting the pharmacist. In introducing his subject he said that it was sometimes necessary to establish the facts in a case, but contended that this did not apply to the problems which vexed the retail pharmacist. "They exist," he said, "in such amazing numbers and crop out with such systematic regularity in daily business life, that one is moved upon occasions to the almost justifiable conclusion that an agency must exist somewhere, the sole purpose of which is to evolve more and better problems to harrass and irritate pharmaceutical practitioners."

The divisions of his address come under the following heads: The regulations under the narcotic and prohibition acts; the growth of parasitic competition; the expansion of physicians' supply houses; wasteful duplications; long hours and excessive number of stores; cult worship; inadequate manufacturers' discounts; drugless drug stores; price demoralization.

He said that parasitic competition menaces the future of retail pharmacy in a greater degree, perhaps, than any other one of the problems. Under parasitic competition he included that great horde of dealers in no way connected with pharmacy which bolsters up its volume of business by exploiting many of the commodities which are rightfully a part of the pharmacist's stock in trade. "These parasites," he said, "contribute nothing to pharmaceutical advancement, render no special service to the public, assume no responsibility for and have but little knowledge of the products which they handle, do not safeguard the public, acknowledge no obligation to the sick in a community, and yet take away millions of dollars' worth of business annually from the pharmacists who measure up to all of the foregoing requirements. Among these poachers in the field of pharmacy are department, cigar and grocery stores, news stands, auto supply stations, barber shops, beauty parlors, millinery shops, feed, hardware and general stores. Maledictions are often hurled at the pharmacist because of the many side-lines he carries without consideration being given to the fact that he is in but a small way compensating with his side-lines for the loss of business he is suffering through unwarranted encroachment upon his field of operations by a multiplicity of interests. Solution of this problem in so far as the sale of harmless drug store commodities is concerned must come through an increasingly better service, education of the public to the need of supporting the pharmacist in time of weal so that his services may be available in time of woe, and a better understanding with manufacturers of drug store products."

Mr. Hunsberger then gave consideration to physicians' supply houses, and waste through duplication of stock, following this with a reference to long hours and the large number of drug stores. He next considered the growing cult worship, which, he said, "presents a problem by reason of the fact that every individual who is enticed into the meshes of one or the other -ism or -pathy is a potential prescription customer lost, until he discovers his error, at least. The steady growth in numbers of these self-designated healers is not surprising, since there is no penchant so pronounced as that which obsesses a large portion of the human race to try anything once, when it comes down to the question of finding a

remedy for its ills, real or imaginary. Since the claims of many of these practitioners are by no means modest with regard to their ability to cure the ills of mankind by a variety of weird and fantastic methods, and they are not modest in proclaiming them to the world, it naturally follows that a certain portion of the public will desert the more conservative but scientifically grounded system of medicine, with its brilliant record of achievement in behalf of human health, and join the hopeful procession which follows in the wake of every ballyhoo artist whose conscience permits him to assure the miraculous and guarantee the impossible. Our part in the solution of the problem consists in lending our effort to any plan which seeks to limit the responsible task of caring for the sick to those who are properly educated and adequately trained according to modern scientific methods, and incidentally to advise our patrons of the unwisdom of jeopardizing their health by submitting to the fads and follies exploited by persons uneducated and untrained in the noble art of healing the sick."

The speaker referred to the uncertainty of the income of the retail pharmacist, and followed these remarks by a discussion of drugless drug stores that continue to engage the attention of students of pharmaceutical problems. "A commendable warfare is being waged," he said, "in many parts of the country against this deceptive method of cheating the licensed pharmacist out of business which rightfully belongs to him. Legislative control is applicable only in so far as the deception in the title is concerned and laws are being passed in many states which forbid the use of any title which falsely implies activities that can only be engaged in by licensed pharmacists. The commercial success achieved by some of these pariahs of the business world emphasized the need for us to stick rather closely to our pharmaceutical birthright if we hope to hold our own as factors in a community. In an out and out contest waged along purely merchandizing lines our chances of coming through successfully are materially reduced because of the difference in overhead, but if the deciding factor shall be the measure of service rendered to humanity our victory is assured."

PHARMACY WEEK IS BECOMING AN INTERNATIONAL MOVEMENT.

From various publications in the United States, Canada, Australia, and elsewhere, it is evident that the suggestion of having a Pharmacy Week is meeting with general approval, and the communications referred to also indicate that the necessity is realized for adhering strictly to the thought that this should be for acquainting the public with the service of pharmacy.

PERSONAL AND NEWS ITEMS.

The Frederick Kimball Stearns Memorial Fellowship in Medicine has been founded at the University of Michigan in honor of the late Frederick Kimball Stearns, who was a lifelong patron of the arts and sciences. He exhibited a special interest in the progress of the University of Michigan, where there are evidences of his interest and generosity, as the Stearns botanical gardens, the fellowship in pharmacy, etc.

Publicity was first given by Dr. William Beaumont of the U. S. Army, of his experiments on digestion, by the publication of a series of observations in the *Philadelphia Medical Record* for January 1825. These experiments were made possible by a wound inflicted on Alexis St. Martin, which failed to heal and resulted in a permanent opening into his stomach which resisted all attempts of closure by natural means, and St. Martin refused to submit to surgical procedures. It was through this opening that food in various stages of digestion was removed for study. An interesting article by **Dr. H. M. Whelpley** on the subject may be found in Volume 51 of the PROCEEDINGS OF THE A. PH. A., pp. 560–564.

In recognition of the importance of his work, the William Beaumont General Hospital (U. S.) at El Paso, Texas, is named for this distinguished scientist.

A recent edition of the *Merrell Messenger* contains the pictures of 16 druggists who are members of state legislatures. Those shown are: Governor Moore, Idaho; Senators: Colton of Colorado; Snodgrass, Missouri; Twomey, New York; Sinclair, Idaho. Representatives: Mooneyham, Alabama; Engler, Connecticut; Strickland, Oklahoma; Rogers, Texas; Estabrook, Massachusetts; Caldwell, Oklahoma; Schmuelling, Ohio; Wendt, Ohio; Kidd, Oklahoma; Davis, Tennessee; Hawley, Montana.

Lieut. General Edgar D. Taylor of Richmond, while in attendance at the recent reunion of the United Confederate Veterans in Dallas, Texas, was the guest of honor at a dinner

tendered to him by the druggists and their families, and of visitors in attendance.

Albert De Lorenzi is sketched in the *Southern Pharmaceutical Journal* for July. His pharmacy has been located at the corner of Main and Ervay, Dallas, Tex., for 35 years.

The Bulletin of the New York Academy of Medicine for May has as frontispiece a picture of Dr. Samuel Bard, a co-worker of Dr. John Morgan, who was influential in the separation of medicine and pharmacy in U. S.*

A Philadelphia paper says that London has its Harley Street noted as a medical thoroughfare, but this array of physicians' signs is not nearly as impressive or numerous as those along Spruce Street (Philadelphia). The record number in a block is between 16th and 17th, which has 64 signs advising of the physicians and surgeons within.

J. W. Thomason, chairman of the Birmingham, Ala., A. PH. A. headquarters building fund campaign, has reported excellent success in the securing of subscriptions.

Director Paul Nicholas Leech, of the American Medical Association Chemical Laboratory, addressed the recent meeting of the American Pharmaceutical Manufacturers' Association at White Sulphur Springs, W. Va., on "Chemistry in the Service of Pharmaceutical Medicine." There is a growing interest in the coöperation of all who serve the public in the treatment of injury and disease.

Otto J. S. Boberg has completed 50 years of service in pharmacy. It was on July 3, 1875, that he began his apprenticeship in a Danish pharmacy, and in 1885 he came to America, where he successfully continued the practice.**

Transfer of the prescription files of the T. A. Miller Pharmacy in Richmond was recently made to the Grant Drug Company. These records date back to 1887, and the prescriptions number approximately 500,000. **Mr. Miller** was for many years a member of the AMERICAN PHARMACEUTICAL ASSOCIATION and a regular attendant.

Prof. Hugo H. Schaefer has successfully passed his examination for the "Doctor of Philosophy" degree at the University of Berne. Dr. Schaefer is assistant professor of chemistry at Columbia College of Pharmacy, and was local secretary at the New York A. Ph. A. meeting in 1919. He is credited with the inception of the Remington Honor Medal award.

Former dean of the University of Valparaiso School of Pharmacy, **Hugh C. Muldoon,** has been elected dean of the School of Pharmacy of Duquesne University of Pittsburgh.

Caswell A. Mayo has been elected dean of New Jersey College of Pharmacy, succeeding Dean **Robert P. Fischelis,** who recently resigned.

Miss Helen Joyce Baldauf, daughter of our fellow member, **George L. Baldauf** of Milwaukee, was graduated with high honors from the University of Wisconsin Department of Journalism.

The U. S. Department of Commerce serves business and manufacturing interests of the United States in many ways. Lists of various importers and dealers in the drug, chemical and pharmaceutical industries are compiled from time to time and may be obtained from the Bureau, or its district and coöperative offices.

Dr. John Alexander Easton, of Glasgow, originated the syrup which is known by his name. However, the late pharmacist, John McMillan of the same city, was the first one to make this preparation—in the pharmacy of George and James Murdoch, where he was senior assistant at the time. Mr. McMillan later became known as the "Martindale" of Scotland.

Miss Eva Sabine Carr, pharmacist of the Church General Hospital at Wuchang, China, writes that she is much interested in her work and is endeavoring to train several students under her charge in the art and science of pharmacy.

W. Bruce Philip, chairman of the House of Delegates, A. Ph. A., and also of the Section on Commercial Interests, has been taking a course under the auspices of the U. S. Chamber of Commerce, for secretaries, at the Leland Stanford University.

The monthly pharmaceutical publication of Havana for June has published in full the comprehensive article by **Chairman E. Fullerton Cook** on "Some Features of the Forthcoming Pharmacopœia."

The secretary of the Kansas Pharmaceutical Association, **J. Will Kelley,** has become associated with the *Pharmaceutical Era* of New York.

Joseph Pearce, of Tampa, Fla., has won the Groover-Stewart prize valued at $1,000.00, being a scholarship in the College of Pharmacy of the University of Florida. This examination is open annually to graduates of the high schools of Florida.

* See JOUR. A. PH. A., Vol. XII, p. 477.

** See JOUR. A. PH. A., May No., p. 459.

Prof. C. T. P. Fennel, dean of Cincinnati College of Pharmacy, recently was injured when an auto struck him as he alighted from a street car. He sustained a fracture of the collar bone and painful bruises. It is reported that he is recovering satisfactorily.

The Carolina Journal of Pharmacy for August carries as frontispiece a picture of the president of the North Carolina Pharmaceutical Association, **Albert Allison James** of Winston-Salem, accompanied by a sketch. In the same number the former president, **James P. Stowe** of Charlotte, is biographed. The latter sketch is a reprint of "Pharmaceutical Personalities" of the July *Druggists Circular*, which also introduces Meyer Feinberg, president of the New York Retail Druggists' Association.

Joseph B. Clower, of Woodstock, Va., has won the "Pictorial Review Company" prize for the best window display in America, and also the second prize for the best letter written on "Pictorial Review as a Sales Getter in My Store." The result indicates not only the value of window dressing but the opportunity of linking up salesmanship with advertising.

The Abbott Laboratories' manufacturing plant at Lawrence and Ravenswood Avenues, Chicago, has been sold to G. D. Searles and Company. The plant consists of two four-story and basement brick buildings. G. D. Searles and Company are manufacturers of scientific, chemical and pharmaceutical products. The property will be used for offices, scientific research laboratory, pharmaceutical manufacturing and shipping.

The Abbott Laboratories will move to new and larger quarters in North Chicago in October.

The Brazilian National Pharmacopœia, as prepared under direction of Señor R. Albino Dias da Silva and approved by the Pharmacopœial Commission, of which Dr. Carlos Chagas is chairman, is ready for publication after authorization has been given by the government of Brazil.

The New Swedish Pharmacopœia has been accepted by the Board of Revisers and awaits Royal approval. This will be the 10th edition and becomes official January 1, 1926. The new nomenclature will require change in labels of the shop bottles of Swedish pharmacists, but adequate time will be given for making these changes, as it means a large expense. The Latin nomenclature, with few differences and modifications, conforms with that of the U. S. Pharmacopœia.

Commerce Year Book for 1924 is a cloth-bound volume of 715 pages and may be obtained from the Government Printing Office, Washington, at $1.00 per copy. This is the third annual issue of the *Commerce Yearbook* and constitutes a comprehensive record of U. S. business life and its foreign competitors and customers; it is a useful guide and source of information relative to problems of trade, industry and the markets.

Leaves from My Life by Annie Kilburn Kilmer, mother of Joyce Kilmer—published by Frye Publishing Co., of New York—will interest all pharmacists because of the association that brings all of the same profession near, because of the sacrifice the son made, because he brought nature near to us in his poetry, because it is his mother's book. The devotion of mother and son are beautifully shown in the verses of the son and in the memories of the mother.

Leaves from My Life contains an intimate sketch of Joyce Kilmer's life from the age of 12 by his mother, and essays of the poet never before printed. Much of the material made of perpetual record is released from diaries of Mrs. Kilmer. A reviewer states: "It is a fascinating chronicle of fine American family life and a testimonial of the enduring love which abides between mothers and their sons." We please to close this reference with words of the mother:

"From then on (the death of Joyce Kilmer) my life has passed like a troubled dream. My greatest comfort was in reading and reciting Joyce's poems to various gatherings of people in clubs, and other societies to whom the name Sergt. Joyce Kilmer was dear. And it is sweet to know that they still hold him in tender reverence. Only last week I read and spoke before some college men, and the rapt silence with which they heard 'Trees' showed that his name and memory still live!"

Dr. Robert P. Fischelis, former dean of New Jersey College of Pharmacy, is recuperating from a breakdown in health at Spring Lake, N. J., and is making excellent progress toward complete recovery.

PLANT SCIENCE LABORATORY SEMINAR AT UNIVERSITY OF MINNESOTA.

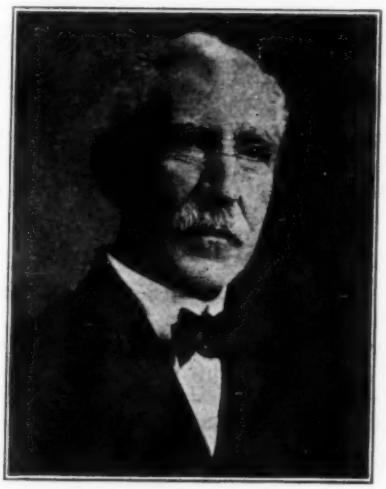
Two pages of the July JOURNAL, pp. 637 and 638, were given over to the Plant Science Laboratory Seminar, to be held at the College of Pharmacy, University of Minnesota, during the week of August 17.

OBITUARY.

LUCIUS ELMER SAYRE.

Former President of the AMERICAN PHARMACEUTICAL ASSOCIATION Prof. L. E. Sayre died, following an illness of several months, on July 21st, in his 78th year. A sketch of the deceased will be found in the January JOURNAL 1919, page 3.

He received his early education in Bridgeton, N. J., and graduated from the Philadelphia College of Pharmacy in 1866. He was for a time a partner of the late Joseph P. Remington, a lecturer in pharmacy at the Women's Medical College, and quiz master in materia medica at the Philadelphia College of Pharmacy. When the school of pharmacy was established at the State University of Kansas, Prof. Sayre was elected dean and also professor of materia medica and pharmacy, served on the faculty, and continued the deanship until the time of his demise.



L. E. SAYRE,

President of the A. PH. A., 1919–1920.

Professor Sayre was director of drug analysis for the Kansas State Board of Health, and also a member of the botanical staff of the Kansas State Board of Agriculture. As an author, he is best known by his contributions to pharmaceutical publications, proceedings of state and national associations, and his textbook on "Organic Materia Medica and Pharmacognosy." He was a member of three U. S. P. Revision Committees, and member of the Committee on Definitions and Standards, Bureau of Chemistry, U. S. Department of Agriculture. His *alma mater* conferred on him the degree of Master in Pharmacy, and the University of Michigan honored him with the degree of Bachelor of Science.

Professor Sayre was president of the AMERICAN PHARMACEUTICAL ASSOCIATION in 1919, and prior to that time held offices in the various sections of the ASSOCIATION—chairman of the Scientific Section in 1893 and of the Section on Historical Pharmacy in 1917. Both the indices of the PROCEEDINGS and of the JOURNAL record the activities of Prof. Sayre during more than 40 years of membership.

In April of 1924 Dean and Mrs. L. E. Sayre celebrated the golden anniversary of their wedding. Members of the university, citizens and friends generally joined in congratulations and wishes. A card received by the writer at that time read, "It is indeed an inspiration to feel that two very quiet people had gathered around them such a circle of friends."

Several years ago Mrs. Sayre's health failed, and she died last October. Professor Sayre had been in poor health for a number of months, and for that reason was unable to attend the last meeting of the Kansas Pharmaceutical Association, at the sessions of which he had been a regular attendant for many years. The deceased are survived by two sons and two daughters: William P. Sayre, Kansas City, Mo.; Lucius Sayre, South Orange, N. J.; Mrs. Mabel F. Cone, Rozel, Kansas; and Mrs. Jeanette P. Canfield, Ann Arbor, Michigan.

Chancellor E. H. Lindley of the University of Kansas closes a letter to the Editor with these words, which may also be applied for the Association: "In the death of Dean Sayre the university has lost one who served the institution with devotion and with distinction. Many of us cherished him also as a friend whose loyalty was unfailing."

Professor Youngken expresses his esteem of the deceased by saying that "Dean Sayre was a leader in the development of our Materia Medica, a great figure in American pharmacy, sincere and open to conviction, a man of splendid character."

GEORGE M. ANDREWS.

George M. Andrews, member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1914, died at his home in Woodstown, N. J., where he had been proprietor of a drug store for more

than 50 years. He started here as a clerk at the age of 19, later became a partner in the firm, and finally sole proprietor, having served in this locality for a period of 57 years. Mr. Andrews established a drug store at Salem, N. J. The two stores are under the ownership of two of the surviving sons, Joseph C., at present conducting the one at Woodstown, and William H., the one at Salem. The deceased joined the New Jersey Pharmaceutical Association in 1883, and was elected president in 1909. He is survived by three sons and a daughter.

LUCIEN B. HALL.

Lucien B. Hall, president and treasurer of the Hall-VanGorder Company, wholesale druggists of Cleveland, O., died at his home in Lakewood June 30th. Mr. Hall had not fully recovered from an attack of pneumonia which he suffered last December. Mr. Hall was president of the National Wholesale Druggists' Association in 1905, after serving on the Board of Control for several years. Besides his business interests he was a director of the Guardian and Savings Trust Company and of the Cleveland Chamber of Commerce.

SOCIETIES AND COLLEGES.

CONVENTION WEEK PROGRAM AT DES MOINES, AUGUST 24–28, 1925.

Headquarters at Fort Des Moines Hotel. For rates and routes to the Des Moines meeting, see p. 562 of the June JOURNAL and p. 645 of the July number; for hotel rates, p. 649 of July issue. For other announcements and references see succeeding pages. For Association and Section Officers see p. X.

GENERAL PROGRAM.

MONDAY, AUGUST 24, 1925.

9:00 A.M. Meeting of the Council.
9:00 A.M. National Association of Boards of Pharmacy.
2:00 P.M. National Association of Boards of Pharmacy.
2:00 P.M. American Conference of Pharmaceutical Faculties.
8:00 P.M. National Association of Boards of Pharmacy.
8:00 P.M. American Conference of Pharmaceutical Faculties.

TUESDAY, AUGUST 25, 1925.

9:00 A.M. Joint Session, National Association of Boards of Pharmacy and American Conference of Pharmaceutical Faculties.
2:00 P.M. National Association of Boards of Pharmacy.
2:00 P.M. American Conference of Pharmaceutical Faculties.
3:00 P.M. Afternoon Tea. D. S. Chamberlain Home. For ladies only.
7:00 P.M. First Session, House of Delegates, American Pharmaceutical Association.
8:00 P.M. First General Session, American Pharmaceutical Association.

WEDNESDAY, AUGUST 26, 1925.

9:00 A.M. First Session, Section on Historical Pharmacy.
9:00 A.M. First Session, Section on Commercial Interests.
9:00 A.M. First Session, Scientific Section.
10:00 A.M. Drive about Des Moines, for the ladies only; Buffet Luncheon, at 12 M. at the Hyperion Club.
2:00 P.M. Second Session, House of Delegates.
7:00 P.M. Meeting of the Council.
7:30 P.M. Musical Program.
9:00 P.M. President's Reception and Ball.

THURSDAY, AUGUST 27, 1925.

9:00 A.M. First Session, Section on Practical Pharmacy and Dispensing.
9:00 A.M. First Session, Section on Education and Legislation.
9:00 A.M. Second Session, Scientific Section.
9:00 A.M. First Session, Women's Section.
2:00 P.M. Second General Session of the American Pharmaceutical Association.
4:00 P.M. Third Session of the House of Delegates.
6:00 P.M. Banquet by Armand Company.
7:00 P.M. Meeting of the Council.
8:30 P.M. Joint Session of Scientific Section with the Section on Practical Pharmacy and Dispensing.

FRIDAY, AUGUST 28, 1925.

9:00 A.M. Second Session, Section on Historical Pharmacy.
9:00 A.M. Second Session, Section on Commercial Interests.
9:00 A.M. Third Session, Scientific Section.
1:30 P.M. Second Session, Section on Education and Legislation.
1:30 P.M. Second Session, Section on Practical Pharmacy and Dispensing.
3:00 P.M. Final Session, House of Delegates.
6:30 P.M. Buffet Dinner by the Waterbury Chemical Company.
7:30 P.M. Final General Session.
9:30 P.M. Meeting of Council.

SATURDAY, AUGUST 29, 1925.

Visit to the State Fair.

GENERAL SESSIONS.

TUESDAY, AUGUST 25TH—8:00 P.M.

First General Session.

1. Reading of Communications.
2. The President's Address.
3. Report of the Secretary.
4. Report of the Treasurer.
5. Annual Report of the House of Delegates.

THURSDAY, AUGUST 27TH—2:00 P.M.

1. Minutes of the First General Session.
2. Reading of Communications.
3. Report of the House of Delegates.
4. Discussion of the Headquarters Building.

FRIDAY, AUGUST 28TH—7:30 P.M.

Final General Session.

1. Minutes of the Second General Session.
2. Final Report of the House of Delegates.
3. Presentation of the Ebert Prize.
4. Installation of the Officers of the Association.
5. Adjournment.

HOUSE OF DELEGATES.

TUESDAY, AUGUST 25TH—7:30 P.M.—*First Session.*

1. Roll Call and Verification of Credentials.
2. Reception of Fraternal Delegates.
3. Appointment of Committee in Nominations for Officers of the House of Delegates.
4. Appointment of Committees on Resolutions and on President's Address.
5. Annual Report of the Council.

WEDNESDAY, AUGUST 26TH—2:00 P.M.—*Second Session.*

1. Reading of Communications.
2. Annual Report by the Secretary.
3. Consideration of the Reports of the Secretary and Treasurer of the Association.
4. Report of the Committee on President's Address.
5. Nomination of three candidates each for the offices of the President, First Vice-President and Second Vice-President and nine candidates for members of the Council.
6. Election of the Secretary, Treasurer and Honorary President of the Association upon nomination of the Council.

THURSDAY, AUGUST 27TH—4:00 P.M.—*Third Session.*

1. Reports of Special Committees.
2. Reports of Standing Committees.
3. Selection of the Time and Place of the next annual meeting.

FRIDAY, AUGUST 28TH—3:00 P.M.—*Final Session.*

1. Reports from the Sections.
2. Report of the Committee on Resolutions.
3. Report of the Committee on Nominations of Officers of the House of Delegates.
4. Election of Officers of the House.
5. Installation of Officers.
6. Adjournment.

TENTATIVE PROGRAM OF THE SECTIONS.

SCIENTIFIC SECTION.

Sessions: Wednesday, August 26, 9:00 A.M.; Thursday, August 27, 9:00 A.M.; and 8:30 P.M., Joint Session with Section on Practical Pharmacy and Dispensing; Friday, August 28, 9:00 A.M.

Chairman's Address, Paul S. Pittenger.

Report of Secretary, F. F. Berg.

General Business.

Papers:

"Activity (Anthelmintic) of Western Oils of Chenopodium," A. R. Bliss, Jr.

"The Microscopy of Reduced Iron," George L. Keenan.

"Toxicity of Quinine Aspirin Mixture on Warm-Blooded Animals," E. A. Ruddiman and Charles F. Lanwermeyer.

"Pollen (Hay Fever) and Protein Tests with Demonstration," John A. Murphy.

"Caffeine as an Antidote for Hydrated Chloral," Charles C. Haskell.

"The Action of Caffeine on the Poisoned Heart," Charles C. Haskell.

"The Effect of Nicotine on the Gastroenemina Muscle of the Frog," Rupert A. Chittick.

"The Effect of Changes of Hydrogen-Ion Concentration upon Emulsions," John C. Krantz, Jr., and Neil E. Gordon.

"Some Notes on the Gravimetric Determination of Emodin and Allied Substances in Cathartic Drugs," George D. Beal and M. C. T. Katti.

"The Oil of Pongamia Glabra," George D. Beal and M. C. T. Katti.

"Determination of Morphine Sulphate in Tablets and Granulations," R. E. Schoetzow.

"The Microtitration of Iodides with Iodate, and the Determination of the Iodide and Ferrous Iron Content in Syrup of Ferrous Iodide," I. M. Kolthoff.

"Some Vegetable Oils; Their Application with Hydrogenated Oils in the Production of Transparent Soaps," E. V. Kyser and H. Amin.

"The Inhibitory Action of Certain Antiseptics on the Activity of Diastase," H. E. Whitmire and E. V. Kyser.

"The Melting Point of Sodium Phosphate, U. S. P.," H. F. Hildebrand, R. E. Schoetzow, and P. M. Giesy.

"Plasticity Measurements in Pharmacy," E. Moness and P. M. Giesy.

"A Simple Method of Demonstrating Colloidal Particles," G. H. Needham.

"The Light-Sensitiveness of Bismuth Subcarbonate," M. W. Tapley and P. M. Giesy.

"A Study of the Thalleioquin Reaction and a New Modification," George W. Hargreaves.

"The Effect of Various Conditions on the Keeping of Some Essential Oils," R. A. Konnerth.

"The Preparation of Methyl Acetylene," M. W. Tapley and P. M. Giesy.

"A Simple Viscometer for Absolute Measurements," E. Moness and P. M. Giesy.

"The Preparation of Tribromhydrin and Propadiene," W. M. Tapley and P. M. Giesy.

"Magma Magnesiæ; Determination of Soluble Solids by Conductivity," B. Stadholz and P. M. Giesy.

"The Chemistry of Nitrosyl Chloride," E. V. Lynn and H. A. Shoemaker.

"The Oil of Ledum Groenlandicum," E. V. Lynn, Arnold Lehman and Russel Cain.

"A Preliminary Examination of Four Northwestern Plants," E. V. Lynn and Paul Y. Cheng.

"The Relaxing Action of Some Aromatic Esters," E. V. Lynn and Dorothy Gaston.

"Local Anesthetics of the Amino Alkyl Benzoates," E. V. Lynn and F. A. Lofgren.

"The Bio-Assay of Aconite," L. W. Rowe.

"Viburnam Nudum as an Adulterant of Black Haw," Heber W. Youngken.

"Digitalis," Arno Viehoever.

"Belladonna," Arno Viehoever.

"Diethylphthalate IV," J. A. Handy and L. F. Hoyt.

"Active Principle and Narcotic Effect of Liatris Odoratissima," E. V. Howell and H. M. Taylor.

"The Assay of Phosphoric Acid and the Sodium Phosphates," Anna Shireman.

Practical Pharmacy and Dispensing.

Pharmacopœias, Formularies and Standards.

Sessions: Thursday, August 27, 9:00 A.M., and 8:30 P.M., Joint Session with Scientific Section; Friday, August 28, 2:00 P.M.

First Session.

Chairman's Address, John C. Krantz, Jr.
Secretary's Report, F. J. Blumenschein.
General Business.
Papers:

"Decolorized Tincture of Iodine," Edward Kremers.

"Hydrogenated Oils. Their Use as Bases in Pharmacopœial Ointments," E. V. Kyser and A. L. Gilreath.

"Glycerite of Bismuth and Its Effect on Elixir Pepsin and Bismuth N. F. IV," K. A. Bartlett.

"A Few Interesting Notes on Oil of Wintergreen," Robert L. Swain.

"Hospital Pharmacy—Is Liquor a Menace to Pharmacy?" Edward Swallow.

Second Session.

"The Advance of Pharmacy in the Age of Chemistry," Morris S. Kharasch.

"The Effect of Certain Amides on the Stability of Modified Dakin's Solution," John C. Krantz, Jr., and Manuel J. Vidal.

"A Note on the Assay of Mass of Ferrous Carbonate," John C. Krantz, Jr., and Manuel J. Vidal.

"A Note on the Assay of Tincture of Hyoscyamus," Wm. F. Reindollar.

"Further Studies in the Extraction of Nux Vomica," J. A. Pierce.

"Aromatic Cod Liver Oil," Clyde M. Snow and Bernard Fantus.

"The Alleged Incompatibility of Acid Sodium Phosphate and Hexamethylenamine," Bernard Fantus and Clyde M. Snow.

"The Standardization of a Drop," Caswell A. Mayo.

"Hospital Pharmacy Problems," H. J. Goeckel.

"Statistical Study of the Number of Registered Pharmacists in U. S.," H. J. Goeckel.

EDUCATION AND LEGISLATION.

Sessions: Thursday, August 27, 9:00 A.M.; Friday, August 28, 1:30 P.M.

Chairman's Address, William Mansfield.

Secretary's Report, J. G. Beard.

General Business.

Papers:

"The Value of a Museum of Industrial Arts in Teaching Industrial Pharmacy," E. V. Kyser.

"Making a Pharmacist," Seneca S. Smith.

"Education for Profit," Wortley F. Rudd.

Further papers to be announced.

COMMERCIAL INTERESTS.

Sessions: Wednesday, August 26, 9:00 A.M.; Friday, August 28, 9:00 A.M.

Chairman's Address, W. Bruce Philip.

Secretary's Report, George Judisch.

General Business.

First session will be devoted to papers and the second session will be given over to speakers on commercial subjects and a discussion of the retail pharmacists' problems.

HISTORICAL PHARMACY.

Sessions: Wednesday, August 26, 9:00 A.M.; Friday, August 28, 9:00 A.M.

Chairman's Address, Robert S. Lehman.

Secretary's Report, L. K. Darbaker.

Historian's Report, E. G. Eberle.

Editor's Report on Progress, History of American Pharmacy, Clyde L. Eddy.

Co-authors' Reports.

Papers:

"Activities of W. J. M. Gordon. Historical Notes on the Manufacture and Use of Glycerine in the Middle West," John Uri Lloyd.

"History of Pharmacy in Alabama," Miss Miriam Curtis.

"The Literature of Pharmacy," F. B. Kilmer.

"History of Pharmacy in Tuscaloosa," W. E. Bingham.

"History of the Kansas Unit Plan," J. S. Chism.

"The Old-Time Drug Store," John W. Ballard.

"The Early History of the Pittsburgh College of Pharmacy," Louis Emanuel.

"Pierre Pomet, a Seventeenth Century Worker for Pure Drugs, Spices and Foods," L. F. Kebler.

"The Good Work of the Western Wholesale Drug Association (1876–81) for Honest Drugs," L. F. Kebler.

"A Glimpse into the Past," E. J. C. Grohman.

"Leaves from the Diary of Dr. W. S. Merrell, Pioneer Pharmaceutical Manufacturer," Caswell A. Mayo.

"Pharmacy in the Early Days of Deadwood, South Dakota," D. F. Jones.

DES MOINES LADIES' AUXILIARY INVITATION.

On behalf of the Ladies' Auxiliary of the Polk County Druggists' Association, the president, Mrs. J. J. Gillespie, extends a cordial invitation to all ladies of the American Pharmaceutical Association to attend the convention in Des Moines during the week of August 24th.

ENTERTAINMENT PROGRAM FOR A. PH. A. CONVENTION.

TUESDAY, AUGUST 25TH.

3:00 P.M. Afternoon Tea, D. S. Chamberlain Home, for ladies only.

WEDNESDAY, AUGUST 26TH.

10:00 A.M. Drive about Des Moines, Buffet Luncheon at 12 P.M. Hyperion Club.

7:30 P.M. Musical Program.

9:00 P.M. President's Reception and Ball.

THURSDAY, AUGUST 27TH.

6:00 P.M. Banquet by The Armand Company.

FRIDAY, AUGUST 28TH.

6:30 P.M. Buffet Dinner by Waterbury Chemical Co.

SATURDAY, AUGUST 29TH.

Visit to State Exhibition.

PHARMACY LABORATORY SEMINAR OF 1925.

The pharmacy laboratory seminar has been continued this year as an organized feature of the Conference of Pharmaceutical Faculties. Similar conferences will be held by chemists, pharmacognosists, and other divisions of pharmaceutical teaching.

Already a number of teachers have promised to place before the Pharmacy Laboratory Conference complete outlines for the new three-year course. This is particularly appropriate and should be very helpful to teachers of laboratory courses since many schools now begin the three-year work for the first time.

It has always been believed a desirable part of the conference to have teaching methods demonstrated. Several have offered to give such demonstrations before the conference.

An important part of dispensing is the determination of the prices, to insure a reasonable profit. This will be one of the subjects discussed and pricing schedules and methods whereby such instruction can be given to classes will come before the conference.

Another question in which uniformity is desirable is the question of percentage solutions.

This will also be discussed and a uniform method agreed upon, if practicable.

The minutes of last year's conference were prepared in detail and copies sent to each school of pharmacy in the country. These minutes consisted of about sixty mimeographed pages and were issued by Professor John C. Krantz, Jr., Secretary, and the expense borne by the University of Maryland.

E. FULLERTON COOK, *Chairman.*

NATIONAL ASSOCIATION OF BOARDS OF PHARMACY.

For program of the National Association of Boards of Pharmacy see July JOURNAL, p. 636. This program also contains the program of the joint meeting of the N. A. B. P. and A. C. P. F.

AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES.

The program of the American Conference of Pharmaceutical Factulties will be found in this issue of the JOURNAL, in the Department of A. C. P. F.

NATIONAL CONFERENCE ON PHARMACEUTICAL RESEARCH.

The program of the fourth annual meeting of the National Conference of Pharmaceutical Research will be found immediately preceding the Department of the A. C. P. F. in this issue of the JOURNAL.

JOINT MEETING OF THE EXECUTIVE COMMITTEES OF THE NATIONAL ASSOCIATION OF RETAIL DRUGGISTS AND OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The joint meeting of the Executive Committees of the National Association of Retail Druggists and of the AMERICAN PHARMACEUTICAL ASSOCIATION will be held Wednesday afternoon, August 26, 4:00 P.M.

REPORT ON HEADQUARTERS CAMPAIGN.

The report on Headquarters Campaign will be held at third general session of the AMERICAN PHARMACEUTICAL ASSOCIATION. The following will be included in the order of business:

1. Report by Chairman J. H. Beal of the Headquarters Building Committee.
2. Report by Chairman H. A. B. Dunning, of Pharmacy Building Campaign Committee.
3. Report by Publicity Director E. L. Newcomb.
4. Five-minute talks by leaders in manufacturing, wholesale, retail and teaching pharmacy throughout the United States on the Headquarters Building movement and its relation to the progress of the different branches of American pharmacy.

IOWA PHARMACEUTICAL ASSOCIATION WILL BROADCAST FROM "WHO," DES MOINES, IOWA.

On the evening of August 17 about 8 P.M. the Iowa Pharmaceutical Association will broadcast from Station WHO, Bankers' Life of Des Moines, Iowa, a special and cordial invitation to every druggist and pharmacist in the United States to attend the sessions of the AMERICAN PHARMACEUTICAL ASSOCIATION to be held in Des Moines, Ia., during the week of August 24th. All druggists and their friends are urged to tune in on this occasion and receive this personal invitation.

The wave length of WHO is 526 meters.

ONTARIO RETAIL DRUGGISTS' ASSOCIATION.

The annual meeting of the Ontario Retail Druggists' Association was held at Ottawa, July 7–9. President Rea reviewed general

conditions of trade and congratulated the members on the progress toward eliminating price cutting. Secretary F. A. Jacobs spoke on legislative matters, and Secretary Samuel C. Henry of the N. A. R. D. gave an outline of the work done by that body during the past year. C. J. Whebby of Toronto was elected *President*. V. W. Meek of Toronto and A. C. Rorabeck of North Bay were elected *Honorary Presidents; First Vice-President*, E. D. Bonnell, Owen Sound; *Second Vice-President*, H. S. Tapscott, Brantford; *Secretary-Treasurer*, F. A. Jacobs, Toronto; *District Representatives:* T. T. Beattie, Ottawa; L. T. Best, Kingston; E. A. Lovell, Oshawa; F. C. Fielding, Toronto; R. A. Greer, Toronto; W. H. Crossland, Barrie; W. W. McIntyre, St. Mary's; Roy Parke, Hamilton; A. Hachnel, Waterloo; J. W. Crookes, Port Arthur; T. N. Summer, London; J. W. McKibbon, Wingham; and A. J. Wilkinson, Windsor.

Ex-President H. H. Rusby of the American Pharmaceutical Association was a guest of honor at the meeting of the Canadian Pharmaceutical Association where he delivered an address on August 4th. He also attended the Nova Scotia Pharmaceutical Society at its semi-centennial anniversary meeting in Halifax July 29–31.

JOINT MEETINGS OF INDIANA AND KENTUCKY PHARMACEUTICAL ASSOCIATIONS.

The associations of Indiana and Kentucky met at the same time and place this year—at West Baden, Ind., June 16–18. The joint meeting presented an opportunity of profiting from experiences and methods practiced by these organizations, new friendships were formed and others strengthened—a feature of the convention in the latter respect was the community singing.

Addresses of the conventions were by Mr. Harden, the druggist member of the Kentucky Legislature, Nels Darling, Samuel C. Henry, C. B. Jordan, Harvey Garrett, G. Barret Moxley, and E. L. Newcomb spoke in behalf of the American Pharmacy Headquarters.

INDIANA OFFICERS.

President—E. E. Goodnight, Lafayette.

First Vice-President—H. V. Bennet, Sullivan.

Second Vice-President—B. McDonough, Marion.

Third Vice-President—Oscar Bradley, Huntington.

Secretary—Wm. Oren, Indianapolis.

Treasurer—H. W. Miller, Terre Haute.

Executive Committee—Scott Kelly, L. B. Upton, T. B. Crigler, Jas. C. Mead.

Culver was selected for the 1926 convention.

KENTUCKY OFFICERS.

President—Geo. J. Ellis, Glasgow.

First Vice-President—E. C. Hardin, Wheatcroft.

Second Vice-President—W. E. Danhauer, Owensboro.

Third Vice-President—R. W. Jones, Alton.

Secretary—J. W. Gayle, Frankfort.

Assistant Secretary—Geo. M. Gayle, Frankfort.

Treasurer—Verdon Driskell.

Executive Committee—Wm. H. Fischer, Louisville, chairman.

The place of meeting will be named by the executive committee.

NORTH CAROLINA PHARMACEUTICAL ASSOCIATION.

The North Carolina Pharmaceutical Association at its last annual meeting voted to create four sections in the organization so as to provide deliberative agencies for the four distinct types of drug workers of North Carolina: Proprietors, prescriptionists, wholesalers and salesmen will hereafter align themselves into groups as indicated, during conventions, and will deliberate and take action on matters in which they are particularly concerned. Under the provisions of this plan it will be possible for each group to center upon its own problems. The recommendations for this revision were made by Secretary J. G. Beard, and these data were taken from the *Carolina Journal of Pharmacy*.

It is contemplated to hold the next convention on board a ship which will make a trip from Wilmington to New York and return. This has not been definitely decided upon because a given number will have to signify their intention to make the journey and attend the convention. The cost for the trip will be $65.00, covering all necessary expenses, including hotel, entertainment and sightseeing in New York.

The officers of the association, elected for the ensuing year, are: *President*, Allison A. James, Winston-Salem; *First Vice-President*, Norman W. Lynch, Charlotte; *Second Vice-President*, Clyde Eubanks, Chapel Hill; *Third*

Vice-President, R. R. Copeland, Ohoskie; *Secretary-Treasurer*, J. G. Beard, Chapel Hill.

President Charles W. Holton of the A. PH. A. was delegate and honored guest, and addressed the convention.

OFFICERS OF VERMONT PHARMACEUTICAL ASSOCIATION.

Vermont Pharmaceutical Association had a drug show this year which was of considerable interest. Dean Theodore J. Bradley was the delegate from the A. PH. A., and addressed the convention. Other speakers were Prof. E. H. LaPierre and Leon A. Thompson. The association pledged $100.00 towards the A. Ph. A. headquarters.

The following officers were elected: *President*, W. E. Chapman, Fairlee; *First Vice-President*, W. H. Saunders, Lyndonville; *Second Vice-President*, H. MacGregor Louthood, Middlebury; *Third Vice-President*, J. S. Slafter, Newport; *Secretary-Treasurer*, F. W. Churchill, Proctor.

Fairlee was selected for the 1926 meeting.

OFFICERS OF WEST VIRGINIA PHARMACEUTICAL ASSOCIATION.

The following officers were elected at the Deer Park meeting of West Virginia Pharmaceutical Association: *President*, Guy Dent, Morgantown; *First Vice-President*, E. V. Romig, Keyser; *Second Vice-President*, Roy Wine, Mullins; *Third Vice-President*, W. R. Crane, Fairmont; *Secretary-Treasurer*, Roy Cook, Charleston.

SEVENTIETH MEETING OF THE AMERICAN CHEMICAL SOCIETY.

The seventieth meeting of the American Chemical Society was held at Los Angeles August 3–8. A pre-convention program had been arranged which enabled those participating to break their trip and enjoy the hospitalities and sights at various points—July 28 at Chicago; July 30 at Colorado Springs; July 31 at Santa Fe, N. M., Albuquerque and Isleta, visiting points of interest, including Indian pueblos; August 1 the Grand Canyon, and August 2 at Riverside. A post convention program was also arranged for, going by way of the northern route and stopping at Portland, Seattle, Searles Lake, Salt Lake, etc.

THE STAFF OF MERCURY.

The snake is an ancient symbol of renovation, the twining serpent adorns the staff of Mercury—the caduceus on the collar of a U. S. Army surgeon. In the third century B. C. a great pestilence visited Rome, and emissaries were sent to the birthplace of Aesculapius to pray for his assistance, and, according to tradition, a magical snake (the god himself in disguise) found his way aboard their ship and returned with them to Rome, but left the vessel as it entered the Tiber and swam to the Sacred Isle and disappeared. A hospital-temple was immediately built on the island and by simply sleeping in it people were cured of all varieties of diseases.

CZECHOSLOVAK ARMY PHARMACISTS.

The Czechoslovak army, with a total of 19,000 officers, includes 60 army pharmacists of the following ranks: 1 general, 2 colonels, 4 lieutenant-colonels, 6 majors, 15 staff captains, 16 captains, 11 first lieutenants, and 8 lieutenants. There is a separate pharmaceutical section in the health department attached to the ministry for national defense, which is directly responsible to the chief medical officer of the Czechoslovak army; however, in all purely pharmaceutical matters it has entire freedom of action, and is the supreme authority in all questions pertaining to pharmaceutical personnel, manufacture and supply of medicines for the army. In addition, army pharmacists are represented on the advisory commission on health of the Ministry of National Defense, on the commission for the collection of medicinal plants of the Ministry of Health, and also on the Red Cross as liaison officer with the army.

The sanitary depots are under the command of an army pharmacist of staff rank, assisted by a number of officer-pharmacists. They each possess an analytical laboratory for the examination of all incoming supplies of medicaments, and a pharmaceutical laboratory in which galenical preparations, tablets, ampoules and impregnated cotton wools are prepared for the use of the army. In addition, a complete stock of all requirements for the army medical and veterinary services is kept, including field laboratories, field X-Ray apparatus, field dental stations, ambulance motor cars, etc.

To each army division a divisional pharmacy is attached. It is in charge of an army pharmacist of staff rank with the authority of the commander of a battalion, and supplies the necessary medicines and surgical dressings for the division in addition to holding the necessary stocks to meet the medical and medicinal requirements of the division on mobilization. Through *Pharmaceutical Era*.

THE PHARMACIST AND THE LAW.

EXEMPTIONS UNDER THE HARRISON LAW OF MEDICINAL PREPARATIONS CONTAINING NARCOTICS.

Publicity has been given by the Department of Narcotic Law Status of Medicines:

1. "The exemption applies only to ready-made preparations and remedies compounded in accordance with the United States Pharmacopœia, National Formulary, or other recognized or established formulas usually carried in stock by a dealer and sold without a prescription."

Concerning the preparations compounded in accordance with the United States Pharmacopœia and the National Formulary there can be no question.

"Other recognized or established formulas" which are "usually carried in stock by a dealer" is less definite. Clearly the Act requires that a preparation containing opium or its derivatives within the quantities stated must be a medicine. It must have a recognized value for medicinal purposes. But in order to be a medicine or in order to have a recognized value for medicinal purposes it would not necessarily follow that the preparation would have to be compounded in accordance with the United States Pharmacopœia or National Formulary. The regulation must, however, establish adequate confines for the formula and it is therefore required that such a formula be recognized or established. Preparations already in general use whose value for a stated medicinal purpose has been recognized and established or whose formulæ have been recognized by competent authorities as being of positive medicinal value are entitled to the exemption. Preparations of this kind which have not been in use and which have not been recognized by competent authorities should be submitted to such authorities for consideration before attempting claim to the exemption.

2. "Competent authorities" may properly be construed to mean public health officials or bureaus that are widely known and recognized to be capable of determining questions pertaining to the medicinal value of proposed medicines. Among these authorities could properly be included the Surgeon General, United States Public Health Service, State Boards of Medical Examiners and other boards or medical organizations well known because of their competency in handling matters pertaining to medicines. Consultation with such officials is recommended in order that there may be no questions as to the value of a new preparation.

A preparation of this kind is subject to tax unless manufactured, sold, etc., as a medicine, and responsibility for its manufacture, sale, distribution, dispensing, or possessing for that purpose is solely upon the manufacturer, compounder or dispenser thereof. Preparations compounded pursuant to private and special formulæ of physicians and druggists, etc., are entitled to the exemption provided there can be no doubt as to their alleged medicinal values. The physician, druggist, or other persons causing their compounding and distribution would necessarily be held responsible for their effectiveness for the remedial purpose alleged and for their incapability of use for purposes condemned by the provisions of the Act.

This provision of the regulation seeks to limit the distribution of preparations of this character to those which are of known medicinal value.

3. "The preparation must contain active medicinal drugs other than narcotics in sufficient proportion to confer upon the preparation valuable medicinal qualities other than those possessed by the narcotic drugs alone." This provision is a furtherance of the first provision and recognizes the inclusion in the law of the word "remedies."

A preparation to be a remedy must contain active medicinal drugs other than narcotics, as stated.

4. "Simple dilutions of a narcotic drug made by admixture with inert or nearly inert substances, as, for instance, sugar of milk, or simple solutions of narcotic drugs in water, sirup, dilute alcohol, flavoring matter, etc., are not within the exemption."

This provision also seeks to confine preparations to formulæ which include drugs other than narcotics which have medicinal value and exclude simple mixtures which could be readily reduced or which could be readily used for producing the effect desired by narcotic drug addicts.

5. "A preparation, to be exempt, must not contain more than one of the several narcotic alkaloids, salts, or derivatives of opium."

This limitation may be read in conjunction with the next:

6. "A preparation which contains the permitted maximum quantity of any one of the various alkaloids, salts or derivatives, if fortified by the addition of any of the other alka-

loids or salts or derivatives, is not within the exemption."

An exempt preparation containing the maximum quantity of opium or any of its derivatives loses its exemption if there is added thereto another alkaloid or derivative even though in exempt quantity.

It is not the purpose of this regulation to restrict the present use of preparations of this kind to those now being manufactured and sold or to discourage the manufacturer or compounder of new medicines of this character. It is merely necessary that the regulation apply the proviso of Section 6 ("That such remedies and preparations are manufactured, sold, distributed, given away, dispensed or possessed as medicines and not for the purpose of evading the intentions and provisions of this act") in such manner as to guarantee only the sale, etc., without tax of those preparations which are of positive known value as medicines, and are remedies for stated ailments.

As provided in Article 143, there is no limitation upon the percentage of narcotic drugs preparations intended for external use may contain. Such preparations must, however, contain ingredients rendering them positively unfit for internal administration. If compliance is made with that requirement the use of the preparation for the alleged medicinal purpose will be guaranteed; there is no necessity for following recognized or established formulas for preparations designed only for external use.

7. "No preparation intended for either internal or external use is exempt if it contains cocaine in any quantity."

GEORGIA INDUSTRIAL ALCOHOL BILL SEEMS TO MEET APPROVAL OF THE INDUSTRIES.

The Pickren and Mann bills in Georgia Legislature are the same; one was presented in Senate, the other in House. They are purely business measures; both the senator and representative are prohibitionists.

The bills provide that ethyl alcohol may be made in Georgia from sawdust, chips, slabs and other waste products capable of producing the alcohol, that the alcohol shall be made under strict state and federal supervision, that it shall be denatured so as to render it poisonous as a beverage, but fit for commercial, industrial and scientific purposes, and that it shall be properly stored and sold.

Progress is being made.

ALCOHOL POLICE FEE PROPOSAL IS MEETING OPPOSITION.

An effort was made to establish provisions whereby a police fee was to be demanded by railroads on carloads of alcohol. The contemplated charge is denounced as rank discrimination; the charge would be passed on and the carriers would profit nearly to the extent of the fee.

TWO COURT DECISIONS.

The Criminal Court of Appeals, of Oklahoma, denied an appeal for reversal by a physician convicted of dispensing morphine. Addiction of individual to whom the narcotic was sold was admitted. Three one-quarter grain tablets of morphine were sold for $3.00, not administered. The punishment was fixed at $500 and one year of confinement in the pententiary.

The Court of Appeals of Alabama reversed a judgment that involved the sale of a patent medicine, which in lower court was declared a violation of the medical practice act; the seller was alleged to be a prescriber without license. There was a dissenting opinion to the effect that if recommending and offering for treatment a remedy did not constitute prescribing then a remedy for every ailment might be prepared and recommended.

DRUG EVIL IS GRADUALLY GROWING LESS.

Dr. O. A. H. de la Gardie, chief of the narcotic department in Philadelphia, said recently that the narcotic evil is being wiped out.

There will probably always be some addicts and constant vigilance is important and essential. Drug addiction is a serious menace and requires law enforcement by imprisonment of the transgressors. Habitual use of narcotics does only harm, except in the case of unfortunates who should constantly be kept under observation, as well as those who for some unworthy purpose misrepresent conditions.

INDIAN MEDICAL EXHIBIT.

A reprint has been made from the proceedings of the U. S. National Museum of "The Indian Medical Exhibit" of the Division of Medicine in the U. S. National Museum, prepared by Charles Whitebread, Assistant Curator. There are 22 interesting illustrations—the first one is the exhibit in the East Gallery, and most of the others relate to the exhibits showing drugs, utensils and methods of treatment.

BOOK NOTICES AND REVIEWS.

The second or 1925 edition of *Official and Tentative Methods of Analysis* of the Association of Official Agricultural Chemists, prepared by the Committee on Editing Methods of Analysis consisting of R. E. Doolittle (Chairman), G. W. Hoover, W. H. MacIntire, A. J. Patten, B. B. Ross and J. W. Sale, is now ready for distribution. In this edition the methods as given in the previous or 1920 edition have been revised to include the additions, deletions, and other changes made at the 1919, 1920, 1921, 1922 and 1923 meetings of the association. The revision has been thorough, extending even to rearrangement of material and the addition of chapters on agricultural liming materials and gelatin.

The new edition has 32 chapters under the following headings: fertilizers; soils; agricultural liming materials; plants, insecticides and fungicides; tanning materials; leathers; waters, brine, and salt; feeding stuffs; preservatives and artificial sweeteners; coloring matters in foods; metals in foods; sugars and sugar products; fruits and fruit products; canned vegetables; cereal foods; meat and meat products; gelatin; dairy products; fats and oils; baking powders and baking chemicals; spices and other condiments; vinegars; coffees; teas; cacao products; flavoring extracts; wines; distilled liquors; beers; drugs; reference tables.

This edition has 510 pages, exclusive of the index; the printing is upon a good quality of paper, and the book is strongly and attractively bound. The price is: for North America and U. S. possessions, $5.00 net, postpaid; for all other countries, $5.50 net, postpaid. Association of Official Agricultural Chemists, Box 290, Pennsylvania Avenue Station, Washington, D. C.

Dictionary of Botanical Equivalents: German-English, Dutch-English, Italian-English. By Ernst Artschwager, Ph.D., associate pathologist, Bureau of Plant Industry, Department of Agriculture. French-English. By Edwina M. Smiley, M.A., formerly instructor of plant pathology, Cornell University. $5^1/_2 \times 7^1/_2$ inches, 124 pages. 2nd edition; revised and enlarged. Price $3.25. Baltimore, The Williams & Wilkins Company.

The Dutch-English and Italian-English sections appear for the first time in this edition. Blank pages are left at the end of each section for the writing in of additional terms and equivalents by the user.

"Readers of foreign botanical literature have for a long time felt the need of an accurate translation of technical terms which are not commonly found in our dictionaries," say the authors in the preface to the first edition. To meet this need was the original motive of the book. That the need was real and that workers welcomed the effort to supply it is amply evidenced by the popularity which greeted the first edition, and which made a new edition necessary.

The list of plant names includes important economic plants, farm weeds, and the Latin equivalents for the larger plant groups. Changes in the arrangement and in the type page have made possible a reduction in the number of pages, and the inclusion of much additional matter, this treatment improving the appearance and compactness of the present edition. The compilation of German-English names occupies 73 pages; the Dutch-English, 16 pages; the Italian-English, 14 pages; and the French-English, 21 pages, blank pages being inserted between each of the sections to permit each user of the book to amplify the list and thus add to its usefulness.

As explained in the first edition, the foundation of the work rests on Schneider's "Illustriertes Handwörterbuch der Botanik;" many terms, however, are taken from other sources, so as to give authentic and comprehensive information.

Distribution through the Drug Trade—how to get it, also decisions governing distribution. —A manual for manufacturers, proprietors, advertisers, advertising agencies and buyers.— Practical answers to practical problems. Compiled by C. H. Waterbury for Committee on Proprietary Goods. National Wholesale Druggists' Association. Price, $1.00.

This is a most interesting treatise of the subject, covering 65 pages. The divisions relate to the drug market, location of the wholesale markets, distribution at wholesale and general policies, decisions on price maintenance, and value of drugs, chemicals and preparations sold by druggists. The index has several hundred references and the bibliography about fifty, the subject matter is tersely presented and still in an interesting way and all of it for application in business. There are six pages of illustrations—charts that depict relationships in the sales of articles in city and country stores, the number of orders and other

details, which give information of value to wholesalers and manufacturers and may also be studied advantageously by retailers.

Reagenzien und Reaktionen der Gebräuchlichen Elemente and Alkaloide. Von Gustav Meyer, Apotheker. Gold-Mk 1.50. Verlag von Gebr. Steffen, Limburg a. d. Lahn.

This handy little volume was compiled by a German apotheker and is intended for the use of students of pharmacy (male and female, as stated on title page), chemistry and medicine. On 102 pages the principal reagents and reactions are given. The simple tests for alkaloids should be of special interest. I notice that Meyer still uses the old chemical formula for ferric chloride, *i. e.*, Fe_2Cl_6.

Grundzüge der Anorganischen Chemie. Ein Kurzgefasstes Hilfsbuch und Repetitorium für Studierende der Naturwissenschaften, Medizin und Pharmazie. Von Dr. Phil. et Ing. Ludwig Wolf, Assistant am Chemischen Institut der Universatät Berlin. Octav. 231 p. Franz Deuticke, Wien I, 1924.

This book from the pen of a teacher of chemistry and a practical man besides, brings out the most important facts. For this reason it is especially valuable to the students of pharmacy and medicine as a textbook as well as a review book, and also to the pharmacist and physician as a hand and reference work. Seven illustrations help to elucidate the text and the appended two tables on Periodic system and the family tree of the Uranium—Radium—Actinium group, are valuable additions. A fifteen page, double column index, very complete and detailed, concludes the excellent book.

Der Kraütersammler. Von Prof. Dr. Hermann Kunz-Krause, Gch. Medizinalrat in Dresden. 101 pp. 45 cents. Gehe—Verlag, Dresden N. 6.

The author is well known in pharmacy, chemistry and medicine the world over. Besides being a practical German apotheker and member of the State Board of Pharmacy, he is director of the Chemical Institute of the Veterinary College in Dresden and also editor of the *Pharmazeutische Nachrichten*, published by Gehe & Co., the Dresden drug firm known universally. Prof. Dr. Kunz-Krause has gained a well-earned reputation by his German translation of Guareschi's master work on alkaloids and by his many contributions on phyto-chemical and pharmaco-chemical researches, published in the pharmaceutical and chemical literature throughout the world.

The first part of the "Herb collector" is devoted to general principles and rules for the collection of plants, which should be strictly followed in order to dispose of the herbs in the market at a fair price. In the second part fifty medicinal plants are described, beginning with Arnica, and ending with Wurmfarn (Aspidium). These monographs are very complete and contain German and Latin name, synonyms, family, description, habitat, commercial drug, time of collection, constituents, uses, etc.

May I suggest that in future editions of this valuable book the index be placed at the end, instead of in the center?

PUBLICATIONS RECEIVED.

Contribution to the Anatomy of the Official and Pharmaceutically Employed Leaf Drugs of the Compositæ. An inaugural dissertation for the doctor's degree by Gustav Weiss. The work was completed at the Pharmaceutical Institute of the University of Basel. Encouragement for the investigation was given by Prof. Dr. H. Zörnig. The candidate dedicates the work to his father and the memory of his mother.

Pulvis Effervescens Compositus.—A Century of the U. S. Pharmacopœia. A thesis submitted for the degree of Master of Science by Arthur Henry Neumann. Bulletin of the University of Wisconsin—serial No. 1304. General Series No. 1081. A general history is given and also the Pharmacopœial history and synonymy; this is followed by tests of the U. S. P. and comments, the titles, synonyms, abbreviations; consideration of the constituents, assay, etc.

THE DRUG STORE FORUM.

The *New York Sun* of recent date, in an editorial, comments on the information obtainable in the drug store, and especially as it applies to the drug stores of the smaller cities. The editorial throughout, while largely concerned with the recent trial in Dayton, Tenn., stresses the publicity given and discussion of events in drug stores, indicating the extent of its influence, not only in political matters, social affairs, but also educational subjects. All this signifies that if the trend of thought is directed in the right way pharmacy may be advanced in various directions and the inroads so evident in some sections stopped.